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The Ohio State University Bulletin

VOLUME XVI

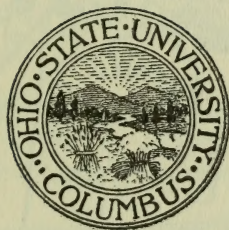
DECEMBER, 1911

NUMBER 15

COLLEGE OF AGRICULTURE

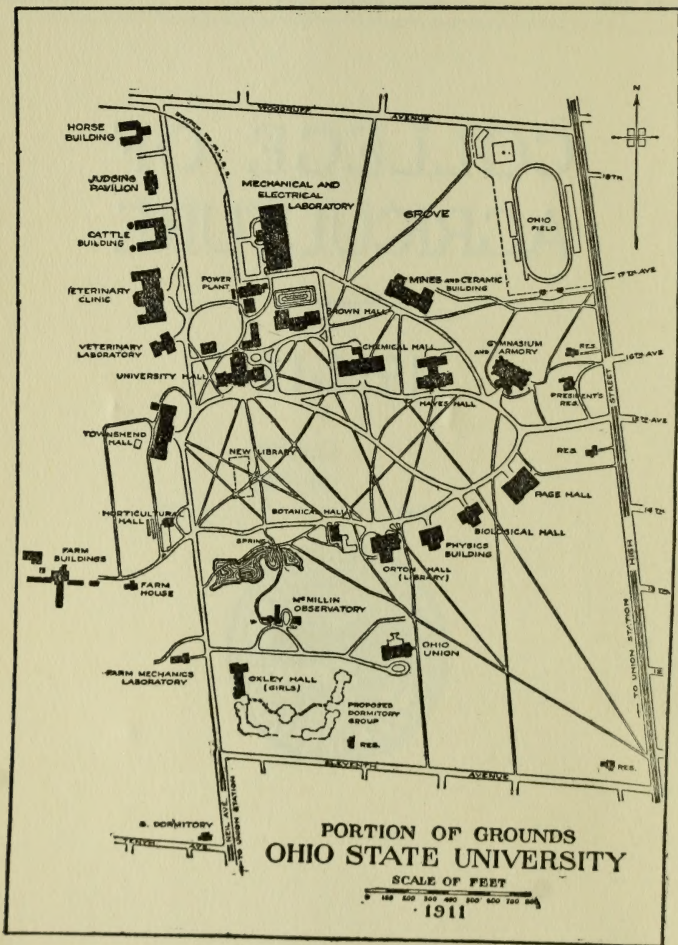
1912-13

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THE OHIO STATE UNIVERSITY

The Ohio State University, located in Columbus, is a part of the public educational facilities maintained by the State. It comprises seven colleges and a graduate school:

- The College of Agriculture,
- The College of Arts, Philosophy, and Science,
- The College of Education,
- The College of Engineering,
- The College of Law,
- The College of Pharmacy,
- The College of Veterinary Medicine,
- The Graduate School.

This bulletin of announcements is devoted exclusively to the work of the College of Agriculture, offered during the academic year, beginning September, 1912.

Note.—The University publishes a bulletin descriptive of each college. Copies may be obtained by addressing W. E. Mann, University Editor, Columbus, Ohio, and stating the college in which the writer is interested.

UNIVERSITY CALENDAR

1912

Entrance examinations (8 a. m.), Tuesday to Saturday,
June 4 to 8.

Summer Session, June 17 to August 9.

Entrance examinations (8 a. m.), Tuesday to Saturday,
September 10 to 14.

First Semester begins—Registration Day—Tuesday, Sep-
tember 17.

President's Annual Address, Friday, September 20 (11
a. m.)

Latest date of admission to candidacy for a degree at the
Commencement of June, 1913, Tuesday, October 1.

Date for mid-semester reports to the Deans concerning
delinquent students, Saturday, November 23.

Thanksgiving recess begins November 27 (6 p. m.) and
ends December 2 (8 a. m.).

Christmas recess begins Friday, December 20 (6 p. m.).

1913

Christmas recess ends Thursday, January 2 (8 a. m.).

Winter Course in Agriculture and Dairying begins Mon-
day, January 6.

First semester ends Thursday, February 6 (6 p. m.).

Second semester begins—Registration Day—Tuesday, Feb-
ruary 11.

Washington's Birthday, Saturday, February 22.

Easter recess, Thursday, March 20 (6 p. m.), to Tuesday,
March 25 (8 a. m.).

Date for mid-semester reports to the Deans concerning
delinquent students, Saturday, March 29.

Competitive Drill—Cadet Regiment—Saturday, May 24.

Memorial Day, Friday, May 30.

Final examinations, Thursday, May 29, to Thursday, June
5 (excepting Friday, May 30).

Entrance examinations (8 a. m.), Tuesday, June 3, to Sat-
urday, June 7.

Commencement, Wednesday, June 11.

COLLEGE OF AGRICULTURE

The College of Agriculture offers nine distinct courses of study:

1. A four-year course in Agriculture.
2. A four-year course in Horticulture.
3. A four-year course in Forestry.
4. A four-year course in Domestic Science.
5. A two-year course in Agriculture.
6. A two-year course in Horticulture.
7. An Apprentice's course in Animal Husbandry.
8. A winter course in Dairying.
9. An eight-week winter course in Agriculture.

The four-year courses of this College are regular collegiate courses of the University and lead to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Horticulture, Bachelor of Science in Forestry, and Bachelor of Science in Domestic Science. The requirements for admission to these courses are given in the following pages.

The short courses are for students who are not so well prepared and are unable to spend four years in the University. It has been found, however, that a large proportion of those who enter the short courses find time and means to continue one of the four-year courses.

FACULTY AND INSTRUCTORS

WILLIAM OXLEY THOMPSON, D. D., LL.D., PRESIDENT
of the University.

HOMER CHARLES PRICE, M. S. A., DEAN, Professor of
Rural Economics and Manager of University Farm.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), SECRETARY,
Assistant Professor of Agronomy.

DEPARTMENTS REPRESENTING THE TECHNICAL WORK OF THE COLLEGE

Agricultural Chemistry.

†ALFRED VIVIAN, Ph. G., Professor.

HENRY ADAMS WEBER, Ph. D., Professor.

JOHN F. LYMAN, Ph. D., Associate Professor.

EUGENE RUTH, B. Sc. (Agr.), Assistant.

CLARA SMITH, B. Sc. (Dom Sc.), Fellow.

FIRMAN E. BEAR, M. Sc. (Agr.), Assistant Professor.

*ORVILLE M. JOHNSON, B. Sc. (Agr.), Assistant Professor.

*MYRON A. BACHTELL, B. Sc. (Agr.), Instructor.

Agronomy.

ARTHUR GILLETT MCCALL, B. Sc. (Agr.), Professor.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), Assistant Professor.

GEORGE LIVINGSTON, B. Sc. (Agr.), Assistant Professor.

*W. HOLDEN DARST, B. Sc. (Agr.), Assistant.

*CLIFFORD J. GRANT, B. C. (Agr.), Assistant.

Animal Husbandry.

CHARLES SUMNER PLUMB, B. Sc., Professor.

FREDERICK RUPERT MARSHALL, B. Sc. (Agr.), Professor.

HENRY WILLIAM VAUGHAN, M. Sc. (Agr.), Assistant Professor.

*HARRY P. EVANS, B. Sc. (Agr.), Assistant.

DAVID MAXWELL FYFFE, Superintendent.

† Absent on leave 1912-13.

Agricultural Extension.

ALBERT B. GRAHAM, Superintendent.
CHRISTOPHER D. STEINER, Assistant.
HARRY E. ESWINE, Assistant.
THOMAS H. WHEELER, Extension Editor.

Dairying.

OSCAR ERF, B. Sc. (Agr.), Professor.
OMER COLE CUNNINGHAM, B. Sc. (Agr.), Assistant
Professor.
WILLIAM L. CLEVINGER, B. Sc., Instructor.
FRANK EDWARD RINEHART, B. Sc. (Agr.), Assistant.
*ARTHUR S. NEALE, B. Sc. (Agr.), Assistant.

Domestic Science.

RUTH A. WARDALL, M. A., Professor.
EDNA NOBLE WHITE, B. A., Associate Professor.
ANNA FRANCES BLOHM, B. A., Instructor.
*MARY EDMONDS, B. Sc. (Dom. Sc.), Assistant.
*ELIZABETH JEFFERSON, B. Sc. (Dom. Sc.), Assistant.
*MABEL MISKIMEN, B. S. (Dom. Sc.), Assistant.
*CLARE WEST, B. Sc. (Dom. Sc.), Assistant.

Forestry.

WILLIAM R. LAZENBY, M. Agr., Professor.
CHRISTIAN H. GOETZ, B. Sc., Instructor.
OTTO W. PFLUEGER, B. Sc. (Agr.), Assistant.

Horticulture.

WENDELL PADDOCK, M. Sc., Professor.
VERNON HAYES DAVIS, M. S. A., Assistant Professor.

LEWIS M. MONTGOMERY, M. Sc. (Agr.), Assistant Professor.

*JOSEPH H. GOURLEY, B. Sc. (Agr.), Assistant Professor.

Rural Economics.

HOMER CHARLES PRICE, M. S. A., Professor.

J. WARREN SMITH, Professor of Meteorology.

THOMAS D. PHILLIPS, B. Sc. (Agr.), Assistant.

†JOHN CHISHOLM, B. S. A., Superintendent of University Farm.

Those marked with (*) in Horticulture, Agricultural Chemistry, Animal Husbandry, Agronomy, Domestic Science, and Dairying, are employed in the Extension Department.

DEPARTMENTS OF GENERAL SCIENCE
FUNDAMENTAL TO THE WORK OF THE
COLLEGE OF AGRICULTURE

Anatomy and Physiology.

ALBERT MARTIN BLEILE, M. D., Professor.

RAYMOND JESSE SEYMOUR, M. S., M. D., Associate Professor.

EDWIN POE DURRANT, M. A., Assistant Professor.

Bacteriology.

CHARLES BRADFIELD MORREY, B. A., M. D., Professor.

EUGENE FRANKLIN McCAMPBELL, Ph. D., Professor.

Botany.

JOHN H. SCHAFFNER, M. S., Professor.

ALFRED PAUL DACHNOWSKI, Ph. D., Assistant Professor.

ROBERT FISKE GRIGGS, B. Sc., M. A., Assistant Professor.

† Resigned.

Chemistry.

WILLIAM MCPHERSON, Ph. D., Professor.

WILLIAM LLOYD EVANS, Ph. D., Professor.

JAMES RENWICK WITHROW, Ph. D., Associate Professor.

Geology.

CHARLES SMITH PROSSER, Ph. D., Professor.

JOHN ADAMS BOWNOCKER, D. Sc., Professor.

THOMAS McDUGALL HILLS, Ph. D., Assistant Professor.

Veterinary Medicine.

DAVID STUART WHITE, D. V. S., Professor.

SEPTIMUS SISSON, S. B., Professor.

FONSA ALLEN LAMBERT, D. V. M., Assistant Professor.

Zoology.

HERBERT OSBORN, M. Sc., Professor.

FRANCIS LEROY LANDACRE, B. A., Professor.

JAMES STEWART HINE, B. Sc., Associate Professor.

Mathematics.

ROSSER DANIEL BOHANNAN, B. Sc., C. E., E. M., Professor.

KARL DALE SWARTZEL, M. Sc., Professor.

CHARLES LINCOLN ARNOLD, M. Sc., Associate Professor.

Physics.

ROBERT F. EARHART, Ph. D., Associate Professor.

HERMAN GUSTAVUS HEIL, Ph. B., Instructor.

DEPARTMENTS REPRESENTING OTHER REQUIRED WORK OF THE COLLEGE.

American History.

GEORGE WELLS KNIGHT, Ph. D., Professor.

HOMER C. HOCKETT, B. L., Associate Professor.

Art.

MRS. MARY REBECCA LAVER, Professor.

Civil Engineering.

CHRISTOPHER ELIAS SHERMAN, C. E., Professor.

Economics and Sociology.

JAMES E. HAGERTY, Ph. D., Professor.

MATTHEW BROWN HAMMOND, Ph. D., Professor.

FAYETTE AVERY MCKENZIE, Ph. D., Associate Professor.

CHARLES CLIFFORD HUNTINGTON, M. A., Assistant Professor.

English.

JOSEPH VILLIERS DENNEY, M. A., Professor.

GEORGE H. MCKNIGHT, Ph. D., Professor.

WILLIAM LUCIUS GRAVES, M. A., Associate Professor.

HARRY FRANKLIN HARRINGTON, M. A., Assistant Professor.

Engineering Drawing.

THOMAS EWING FRENCH, M. E., Professor.

ROBERT MEIKLEJOHN, M. E., Assistant Professor.

German.

M. BLAKEMORE EVANS, Ph. D., Professor.

BERTHOLD AUGUST EISENLOHR, M. A., Associate Professor.

MAY THOMAS, Ph. D., Assistant Professor.

Industrial Arts.

FRANK EDWIN SANBORN, S. B., Professor.

CLEMENT C. BEEM, Instructor.

CHARLES PHILIP CROWE, Instructor.

Romance Languages.

BENJAMIN LESTER BOWEN, Ph. D., Professor.

CHARLES A. BRUCE, B. A., Professor.

EDGAR SHUGERT INGRAHAM, Ph. D., Associate Professor.

MISCELLANEOUS

Architecture.

JOSEPH NELSON BRADFORD, M. E., Professor.

CHARLES ST. JOHN CHUBB, C. E., Associate Professor.

Library.

OLIVE JONES, B. A., Librarian.

Military Science.

CAPTAIN GEORGE L. CONVERSE, U. S. A. (Ret.), Professor.

Physical Education.

H. SHINDLE WINGERT, M. D., Professor.

ALICE LITTLEJOHN, M. D., Associate Professor.

ADMISSION

Applicants for admission must be at least sixteen years of age. The College is open on equal terms to both sexes.

UNIVERSITY ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Entrance Board, Ohio State University, Columbus

ADMISSION TO THE COURSE LEADING TO A DEGREE

There are two modes of admission to the course leading to a degree: (a) by certificate, (b) by examination.

ADMISSION BY CERTIFICATE

Applicants may be admitted to the four year course in Agriculture and to the four-year courses in Horticulture and Forestry without examination on presentation of properly endorsed certificates from any first or second grade high school in this state, or from approved normal schools or from the State Board of School Examiners or from any school outside of the state which is recognized by the University, under the following provisions:

(a) If from secondary schools, the certificate must show that the applicant is a graduate in good standing of the school issuing it; and also must state in detail the studies pursued, the text-books used, the amount of work done in each study, the amount of time devoted to it, and the fact that the applicant has passed in the work.

(b) Any entrance requirement not covered by a certificate must be met by examination.

Blank certificates may be obtained by addressing the Secretary of the Entrance Board. Certificates should be filled out and returned to the University by the proper school official as early as possible after the close of schools in June.

Applicants to be admitted to the course in Domestic Science without examination must present properly endorsed certificates from such secondary schools as have been accredited or recognized by the University or from approved normal schools or from the State Board of School Examiners, subject to the provisions above stated.

ADMISSION BY EXAMINATION

The Entrance Board will conduct entrance examinations June 4 to 8, and September 10 to 14, 1912. A part of the examinations may be taken in June and the remainder in Sep-

tember. All applicants for admission who cannot conform to the requirements for admission by certificate must take examinations for admission.

Schedule—Examinations will be from 8 to 12 a. m. and from 1 to 5 p. m. Students intending to take any of the examinations scheduled in any given half day must appear within one hour after the examination has begun. Students applying for examination will first go to the office of the Entrance Board, Room 100, University Hall, for registration.

- | | | |
|------------|-------|---|
| Tuesday, | A. M. | History: Ancient and Medieval (to 814 A. D.), Medieval and Modern (after 814 A. D.), English. |
| Tuesday, | P. M. | English Composition and Rhetoric, English Classics, Chemistry. |
| Wednesday, | A. M. | Algebra, Physical Geography. |
| Wednesday, | P. M. | Plane Geometry, German, Spanish. |
| Thursday, | A. M. | Civil Government, Solid Geometry, Zoology. |
| Thursday, | P. M. | Beginning Latin and Cæsar, Elements of Agriculture, Trigonometry, Commercial Geography. |
| Friday, | A. M. | Physics, Physiology, Botany. |
| Friday, | P. M. | American History, French, English Literature. |
| Saturday, | A. M. | Vergil, Cicero, Domestic Science. |

REQUIREMENTS BY UNITS *

A unit is the equivalent of a course of study covering a school year, during which not less than one hundred and twenty clock-hours are spent in class-room work on the study. To obtain full standing applicants under twenty-one years of age must have credit by examination or certificate for twelve units (and in the course of Domestic Science fifteen units) of which two shall be English, two foreign language (in Domestic Science three units of English and four foreign language), two Mathematics, one History, and one Physics, selected from the following list:

* A special bulletin of entrance information will be mailed on request. Address the University Editor.

English.....	1, 2, 3, or 4 units
(Foreign students may substitute their native language for the English requirement.)	
American History or American History and Civil Government	1 unit
Ancient History (Greek and Roman) and Medieval History to 814 A. D.....	1 unit
Medieval and Modern History (from 814 A. D. to the present)	1 unit
(For the present General History may be counted as a unit, but not in addition to Ancient or Medieval and Modern History.)	
English History	1 unit
Algebra (through quadratics).....	1 unit
Algebra (beyond quadratics)	$\frac{1}{2}$ unit
Geometry (plane)	1 unit
Geometry (solid)	$\frac{1}{2}$ unit
Trigonometry	$\frac{1}{2}$ unit
Latin	2, 3, or 4 units
Greek	2, 3, or 4 units
German	2, 3, or 4 units
French	2, 3, or 4 units
Spanish	2, 3, or 4 units
(Not less than two units of any language will be accepted.)	
Commercial Geography	
Physics	1 unit
Chemistry	1 unit
Physical Geography	1 unit
Zoology	1 unit
Botany	1 unit
Physical Geography	} For the present any two of these may be counted together as
Zoology	
Botany	
Physiology	
Agriculture	} The Entrance Board may, after investigating each claim, grant a total credit of not to exceed
Manual Training	
Free-hand Drawing	
Domestic Science	

A study listed as a half unit will be counted merely as such even if the course has extended for more than a half year. A study listed as one-half or one unit will be given either rating, depending upon the length of the course. On a study listed as one unit, no credit will be given for less than a year's work.

No student under twenty-one years of age will be admitted to college if he is conditioned in more than two units. All entrance conditions must be removed within two years after admission.

Students over twenty-one years of age, after obtaining credit for elementary or "grade" work, and for such other subjects as may be necessary to qualify them for the classes that they wish to enter may, on the presentation of satisfactory reasons, be admitted by the joint action of the Entrance Board and the Executive Committee of the College, to any class in the College, provided that if any student who has been admitted on these conditions afterwards becomes a candidate for a degree, he shall take the omitted entrance examinations at least one academic year before the degree is conferred, or, in lieu thereof, the Entrance Board may substitute excess work in other approved subjects (Faculty Rule 97).

ADMISSION WITH ADVANCED STANDING

Applicants who have completed at least one year's work in an approved college, and who bring official and explicit certificates describing their courses of study and scholarship, and letters of honorable dismissal, will be admitted in accordance with either of two plans:

(1) The entrance units on which the candidate was admitted to the approved college will be accepted at their face value; deficiencies will be made up from the college credits presented, and advanced credit will be given for any remaining satisfactory work; or

(2) One year's work will be accepted in lieu of entrance units and the candidates will be admitted without examination and without conditions, but without any advanced standing on the year's work.

Applicants who have completed less than one year's work in an approved college will be given credit for satisfactory work provided they can meet regular entrance requirements.

REQUIREMENTS FOR SHORT COURSES

No examinations will be required for the two-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the Principal or Superintendent of the school last attended, recommending him to the University.

COURSES OF STUDY

AGRICULTURE

The course in Agriculture is one of a number of regular four-year collegiate courses in the University. It is designed not only to make specially trained agriculturists, but also educated men. The course pre-supposes that a young man has had a high-school training, or its equivalent, and that he has had the training in farm matters that usually comes to a young man who has lived on a farm. It supplements this training, but does not repeat it. The technical training in this course consists of those matters which years of experience in teaching have shown are either lacking or most necessary. Young men from the cities are entering this course, as they should do if they expect to engage in agricultural pursuits, but it should be understood that the course in Agriculture does not, except incidentally, supply that training in farm matters which comes from actual life upon the farm. Such a course could be readily planned, but it would waste that valuable time of nine-tenths of the students who now enter the course.

The officers of the College recognize the danger of a too special or technical training of under-graduate students in a subject having such a wide scope, and one requiring for its successful prosecution such breadth of knowledge as agriculture. A careful examination of the course as outlined will show that about one-third of the time of the student during the four years is, or may be, devoted to language (English and foreign), history, and economics, about one-third to pure

science, and one-third to technical or professional training. Electives in the junior and senior years allow the student, if he chooses, to specialize in animal husbandry, agronomy, dairying, rural economics, agricultural chemistry, bacteriology, botany or entomology.

No man or woman is well educated until he or she has been taught both to do and to think. Both faculties are necessary and each assists the other. Experience and reason, however, show that the students who enter the courses in agriculture have been better trained in doing than in thinking. With them manual training is not so necessary, as an educational factor, as with students from the cities. However, special emphasis is laid on training the faculties of observation, reason and judgment. The laboratory methods and facilities are most thorough and complete in all scientific and technical courses, giving a training which cannot be obtained merely from books.

COURSE IN AGRICULTURE

Degree—Bachelor of Science in Agriculture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Inorganic.		Qualitative.	
Zoology (101)	3.	Zoology (102)	3.
Invertebrate.		Vertebrate.	
English (101)	2.	English (104)	2.
Paragraph Writing.		Brief Making.	
Animal Husbandry (101)	4.	Animal Husbandry (102)	4.
Cattle and Sheep.		Horses and Swine.	
Drawing (125)	2.	Geology (152)	3.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

First Semester.		Second Semester.	
Geology (153)	3.	Agronomy (104)	4.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Botany (101)	4.	Botany (102)	4.
Physiology (101)	3.	Physiology (102)	3.
Zoology (107)	3.	Zoology (108)	3.
Entomology.		Entomology.	
Bibliography (103)	1½.		
Cadet Service	1.	Cadet Service	1.

THIRD YEAR

First Semester.		Second Semester.	
Agronomy (106)	4.	Agronomy (101)	4.
Dairying (101)	4.	Horticulture (118)	4.
Modern Language	4.	Modern Language	4.
French, German, or Spanish.		French, German, of Spanish.	
Meteorology (101)	2.		

And one of the following:

Animal Husbandry (103)	4.	Animal Husbandry (104)	4.
Veterinary Medicine (150)	3.	Veterinary Medicine (149)	3.
Forestry (*)	4.	Dairying (102)	4.
Zoology (113)	4.	Zoology (114)	4.
Entomology.		Entomology.	
Bacteriology (107)	4.	Bacteriology (110 or 112)	4.
Agricultural Chem. (*)	4.	Agricultural Chem. (*)	4.
Botany (*)	3 or 4.	Botany (*)	3 or 4.
Agronomy (107)	4.	Agronomy (102)	3.
Animal Husbandry (105)	3.	Animal Husbandry (106)	4.
		Meteorology (102)	2.

FOURTH YEAR

First Semester.		Second Semester.	
American History (101) or		American History (102) or	
Economics (135)	3.	Economics (136)	3.
Rural Economics (103)	4.	Rural Economics (104)	3.
Farm Management.		Agricultural Economics.	

Elective

Ten hours a week throughout the year from any of the courses given in any of the colleges of the University upon which the student is qualified to enter, except the College of Law. Two hours a week of this elective work may be devoted to a thesis, subject to the consent of the instructor under whom the thesis is to be written.

*Students electing Agricultural Chemistry, Botany, or Forestry in their junior year should consult the department interested regarding the same before being registered.

HORTICULTURE

This course was established to meet a growing demand for special education and training in the College of Agriculture. It seeks to familiarize the student with those sciences that are fundamental in horticulture and to give a certain amount of technical and literary training.

Among the sciences that form the natural basis of a sound, practical knowledge of horticulture are chemistry, physics, botany, geology, zoology, and entomology. To these a large part of the first two years of the course is devoted. In addition, one modern language, rhetoric or English composition, drawing and shopwork are required.

The last two years of the course are devoted mainly to horticulture proper, with some more strictly cultural studies like history or economics. A third part of the required work of the fourth year is elective, and may be chosen from any course in the University upon which the student is qualified to enter.

The primary object of the course is to teach those who desire to become fruit-growers, gardeners, nurserymen, florists, or landscape gardeners, what they most need to know as a foundation for their professional work. To this end both the science and art, or the theory and practice, are taught. While the sciences are invaluable in giving accurate and definite knowledge regarding the origin and growth of plants, and the composition and physical properties of the soil, they cannot tell us just how to select varieties, or how to propagate, transplant, cultivate, fertilize, prune, spray, or what is equally essential in practice, how to harvest, store and market the product to the best advantage.

For earnest, enterprising young men and women, horticulture, in its various branches, offers as large a reward for intelligent, well directed effort as any other pursuit or profession.

COURSE IN HORTICULTURE

Degree—Bachelor of Science in Horticulture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Inorganic.		Qualitative.	
Zoology (101)	3.	Zoology (102)	3.
Invertebrate.		Vertebrate.	
English (101)	2.	English (104)	2.
Paragraph Writing.		Brief Making.	
Horticulture (101)	4.	Horticulture (102)	4.
Principles.		Principles.	
Drawing (125)	2.	Geology (152)	3.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

First Semester.		Second Semester.	
Horticulture (103)	3.	Horticulture (104)	3.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Geology (153)	3.	Agronomy (104)	4.
Zoology (107)	3.	Zoology (108)	3.
Economic.		Economic.	
Botany (101)	4.	Botany (102)	4.
Bibliography (103)	1½.		
Cadet Service	1.	Cadet Service	1.

THIRD YEAR

First Semester.		Second Semester.	
Horticulture (105)	4.	Horticulture (106)	4.
Modern Language	4.	Modern Language	4.
French, German, or Spanish.		French, German, or Spanish.	
Physiology (101)	3.	Physiology (102)	3.
Botany (125)	4.	Botany (126)	4.
Meteorology (101)	2.	Horticulture (108)	3.

FOURTH YEAR

First Semester.

American History (101) or
Economics (135) 3.
Horticulture (109) 3.
Horticulture (107) 3.

Second Semester.

American History (102) or
U. S. Political. 3.
Economics (136) 3.
Horticulture (110) 3.
Botany (116) 3.

Elective

Seven hours a week through the year, chosen from any of the courses given in any college of the University upon which the student is qualified to enter, except the College of Law, two hours a week of which may be devoted to thesis, subject to the approval of the department in which the thesis is to be written.

FORESTRY

The main objects in the establishment of a four-year course in Forestry are: (1) To educate and train young men in forestry; (2) To promote forestry in the State of Ohio.

The facilities for becoming well grounded in the fundamental and accessory studies are provided in the various departments of the University. Language, mathematics, chemistry, engineering, botany, geology, entomology, soil physics, meteorology, etc., form a large part of the work of the first two years of the course, while the last two years are devoted to the more technical subjects.

It is the aim of the department to reach two classes of students: First, those who purpose to make forestry their life work. Second, those who, while specializing in other courses, desire to acquaint themselves with the elements or with certain phases of the general subject.

The regular course seeks to prepare the student not only for practical work in the woods, but for national and state service in various lines; for consultation work for lumbermen, railroad companies, water-works, park commissions and private owners.

To those who enjoy outdoor life, and are willing to undergo vigorous tests of mental and physical strength, forestry presents an especially inviting field. The remuneration compares favorably with that of other salaried professions, and the opportunities for private enterprise are wide and varied.

The art of forestry has made such progress in our country, that it is sometimes advisable to specialize in certain well defined branches of the subject.

Opportunity for special work, in addition to what is included in the regular course, is offered in silviculture, forest management, and arboriculture.

Facilities for original and research work in scientific forestry are found in the various scientific and engineering laboratories of the University.

COURSE IN FORESTRY

Degree—Bachelor of Science in Forestry.

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding numbers under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Mathematics (121)	3.	Mathematics (122)	3.
Modern Language (101)	4.	Modern Language (102)	4.
French, German, or Spanish.		French, German, or Spanish.	
English (101)	2.	English (104)	2.
Engineering Drawing (101)	4.	Forestry (102)	2.
Forestry (101)	2.	Elementary.	
Elementary.		Botany (110)	2.
		Dendrology.	
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

First Semester.		Second Semester.	
Botany (101)	4.	Botany (102)	4.
Zoology (109)	3.	Zoology (110)	3.
Entomology.		Entomology.	
Modern Language (103)	4.	Modern Language (104)	4.
French, German, or Spanish.		French, German, or Spanish.	
Civil Engineering (121)	6.	Forestry (104)	3.
Surveying.		Arboriculture.	
Bibliography (103)	½.	Geology (152)	3.
Cadet Service	1.	Cadet Service	1.

THIRD YEAR

First Semester.		Second Semester.	
Forestry (105)	3.	Forestry (106)	3.
Silviculture.		Silviculture.	
Botany (117)	4.	Botany (118)	4.
Forest.		Forest.	
Geology (153)	3.	Agronomy (104)	4.
Meteorology (101)	2.	Elementary Soils.	

Not less than five hours throughout the year from the following:

Physics (105)	4.	Physics (106)	4.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Bacteriology (107)	4.	Bacteriology (110)	4.
Zoology (113)	4.	Zoology (114)	4.
Engineering Drawing (137)	2.	Engineering Drawing (138)	2.
Economics (135)	3.	Horticulture (108)	3.
Agronomy (107)	4.	Economics (136)	3.

FOURTH YEAR.

First Semester.

Forestry (107)	4.
Mensuration, Valuation, Wood Technology.	
Forestry (109)	4.
History and Management.	
Botany (125)	4.
Physiological Ecology.	

Second Semester.

Forestry (108)	4.
Utilization and Lumbering.	
Forestry (110)	4.
Policies and Economics.	
Botany (126)	4.
Physiological Ecology.	

Not less than five hours throughout the year from any course offered by the University upon which the student is qualified to enter.

Unless the candidate for a degree has had a full equivalent, not less than one summer of practical work in the woods is required before graduation.

TWO-YEAR COURSE IN AGRICULTURE

The Short Course in Agriculture is a two-year course, designed to give practical instruction in the various branches of agriculture, and is intended primarily for those students whose previous training does not qualify them to enter the four-year course. While believing that the four-year course is none too long for the students who expect to engage in agricultural pursuits, it is recognized that there are many students whose circumstances make it impossible to take a four-year collegiate course in agriculture, and yet who would be greatly benefited by taking a less extended training for their life work.

This course is especially desirable for students of rather mature age. It contains as thorough instruction as the time will admit in agronomy, animal husbandry, dairying, horticulture (including fruit culture and vegetable gardening), forestry, veterinary medicine, economic entomology, bacteriology, and the sciences underlying these subjects. The second year contains optional work, so that it is possible for students to specialize in horticulture, agronomy, animal husbandry, or dairying.

No degree is given on the completion of the work, but a certificate is issued stating fully the work done.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Animal Husbandry (129)	4.	Animal Husbandry (130)	4.
Horticulture (111)	4.	Horticulture (112)	4.
Shopwork (101)	2.	Shopwork (104)	2.
Agronomy (103)	3.	Agronomy (108)	4.
Chemistry (101)	4.	Chemistry (102) or	
Elementary.		Agricultural Chem. (102)	4.
		Soil Fertility.	
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

First Semester.

Agronomy (105)

Dairying (109)

Elementary.

Cadet Service

Second Semester.

4. Rural Economics (102) 4.

4. Dairying (102) 4.

Farm Dairying.

1. Cadet Service 1.

And two subjects each semester chosen from the following:

Veterinary Medicine (150) 3. Veterinary Medicine (149) 3.

Animal Husbandry (123) 4. Animal Husbandry (128) 4.

Dairy Cattle.

Feeding and Breeding.

Horticulture (113) 4. Horticulture (114) 4.

Pomology.

Pomology.

Zoology (109) 4. Zoology (110) 4.

Entomology.

Entomology.

Physiology (103) 3. Bacteriology (104) 3.

Mathematics (103) 5. Mathematics (104) 5.

Algebra.

Botany (112) 4.

Physics (101) 6. Elementary.

Forestry () 3. Geology (162) 4.

Physical Geography.

TWO-YEAR COURSE IN HORTICULTURE.

This course is intended to be to those engaged in horticultural pursuits what the two-year course in agriculture is to those interested in farming. Practical instruction will be given in the subjects which are of interest to the fruit-growers, gardeners, nurserymen, florists, and landscape gardeners. The course is primarily for the student who, for various reasons, cannot take the four-year course in horticulture and yet desires to have a somewhat thorough preparation in the fundamentals of horticulture.

No degree is given on completion of the work, but a certificate is issued stating fully the work done.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department; the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Horticulture (111)	4.	Horticulture (112)	4.
Zoology (109)	4.	Zoology (110)	4.
Entomology.		Entomology.	
Shopwork (101)	2.	Shopwork (104)	2.
Chemistry (101)	4.	Chemistry (102) or	
Elementary.		Agricultural Chem. (102)	4.
Agronomy (103)	4.	Soil Fertility.	
		Botany (112)	4.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

First Semester.		Second Semester.	
Horticulture (113)	4.	Horticulture (114)	4.
Pomology.		Pomology.	
Horticulture (115)	4.	Horticulture (116)	4.
Agronomy (105)	4.	Rural Economics (102)	4.
Cadet Service	1.	Cadet Service	1.

One of the following:

Forestry	4.	Horticulture	4.
Mathematics (103)	5.	Mathematics (104)	5.
Algebra.		Bacteriology (104)	3.
Physics (101)	5.	Geology (162)	4.
Physiology (103)	3.	Physical Geography.	

APPRENTICE'S TWO-YEAR COURSE IN ANIMAL HUSBANDRY

This is essentially the same as the regular two-year course in Agriculture, but is especially arranged for students who wish to specialize in Animal Husbandry work. The course includes two years at the University and two years on stock farms. Through arrangement with the Department, specially qualified men may take this course. They will spend the first year at the University; the second will be devoted to practical training on stock farms by arrangement of the Department, pay being given for the service; the third year will be at the University, and the fourth year on other stock farms. Some of the leading stockmen of Ohio and other States have agreed to co-operate in arranging this course.

Not over 50 matriculants will be permitted to enroll, and each person must receive the written authority of the Animal Husbandry Department before being registered. No changes or substitutions will be permitted, and each person taking the work must agree to take the practical farm work as given in the course.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department; the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Types and Market Classes (101)	4.	Types and Market Classes (102)	4.
Cattle and Sheep.		Horses and Swine.	
Animal Husbandry (125)	3.	Animal Husbandry (128)	3.
Feeding Animals.		Breeding Animals.	
Agronomy (103)	4.	Agronomy (108)	4.
Chemistry (101)	4.	Agricultural Chem. (102)	4.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR

At least 300 days' service on an accredited stock farm, the student to be placed thereon by arrangement with the Department of Animal Husbandry.

THIRD YEAR

First Semester.

Animal Husbandry (129)	4.
Poultry Husbandry	2.
Zoology (109)	4.
Veterinary Medicine (150)	4.
Physiology (103)	3.
Rural Economics (101)	2.

Second Semester.

Animal Husbandry (130)	4.
Meats and Meat Products	
(110)	1.
Veterinary Medicine (149)	4.
Bacteriology (104)	3.
Botany (112)	4.
Agricultural Economics	3.

FOURTH YEAR

At least 300 days' service as during the second year, though on a different farm or farms from that year will be required. At end of fourth year, with a satisfactory record, the student will be granted an Apprentice's Certificate in Animal Husbandry.

WINTER COURSES

The Ohio Dairy School

This course in Dairying is established to meet the wants of those who have neither the time nor means for more extended courses. It is designed especially for those who are desirous of mastering the art of butter and cheese making or who wish to become fitted for the position of manager or superintendent of a creamery or cheese factory. In this course the greater part of the time is given to laboratory or dairy room practice. This consists in the testing of milk as to purity and content of butter fat; the use and care of centrifugal separators and other dairy devices; the making of butter and cheese by the most improved methods; in short, all the essential operations of the creamery, factory, and home dairy management are repeatedly performed under the guidance and direction of competent instructors. A special bulletin describing this course will be mailed, upon application, to any one interested.

Winter Course in Agriculture

The eight-week Winter Course in Agriculture has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

Those who are interested are invited to write for the special announcement describing this course.

DOMESTIC SCIENCE

The course in Domestic Science is planned to meet the special needs of women students. Four years of regular university work are required. The department of Domestic Science stands for a liberal training of a university grade, which gives a homeward trend to the education of young women.

The course is essentially scientific in character, but a fair amount of literary, artistic, and economic training is provided. Certain courses offered in this department are elective for students who specialize along other lines of work. The prescribed course affords opportunity for a student to specialize in domestic science, and elective courses in addition to this provide training for those who wish to teach the subject. Students desiring to enter this course will be required to present fifteen units entrance requirements.

OUTLINE OF THE COURSE

Degree—Bachelor of Science in Domestic Science

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Art (101)	2.	Art (102)	2.
English (101)	2.	English (104)	2.
Zoology (101) or		Zoology (102) or	
Botany (101)	3 or 4.	Botany (102)	3 or 4.
Modern Language (101)	4.	Modern Language (102)	4.
French or German.		French, or German.	
Domestic Art (101)	2.	Domestic Art (102)	2.
Hand Craft.		Textiles.	
Physical Training	1.	Physical Training	1.

SECOND YEAR

First Semester.		Second Semester.	
Chemistry (127)	5.	Agricultural Chem. (123)	5.
Organic.		Domestic Science (102)	4.
Domestic Science (101)	4.	Physiology (102)	3.
Physiology (101)	3.	Modern Language (104)	4.
Modern Language (103)	4.	French, or German.	
French, or German.			
Engineering Draw. (127)	1½.	Engineering Draw. (128)	1½.
Bibliography (103)	½.		
Physical Training	1.	Physical Training	1.

THIRD YEAR

First Semester.

Second Semester.

Economics (138)

5. Sociology (122)

5.

Group A

Bacteriology (107)

3 to 5.

Domestic Science (104)

3.

Agricultural Chem. (124)

5.

Domestic Science (103)

4.

Group B

Art (105)

2.

Art (106)

2.

Domestic Art (103)

3.

Domestic Art (104)

3.

Either Group A or Group B may be chosen; one must be taken and both may be. Enough work must be elected with Group A or Group B to make fifteen hours.

FOURTH YEAR

First Semester.

Second Semester.

Group A

Domestic Science (105)

2.

Domestic Science (106) 3 to 5.

Domestic Science (107)

3.

Group B.

Philosophy (183)

2.

Philosophy (184)

2.

Art (119)

1.

Art (120)

1.

Enough work must be taken with Group A or Group B, or both, to total not less than fifteen hours.

GRADUATE WORK IN COLLEGE OF AGRICULTURE

Graduate work in the College of Agriculture is particularly planned for those persons who expect to enter College or Experiment Station work, or the Government Bureaus relating to Agriculture.

It is recognized that the scientific advance in agriculture requires men who are conversant with practical agriculture and the related sciences, and who are also prepared to do research work and to put into good pedagogic form the results of recent investigation.

Equipment

The University has especially good facilities for advanced work. Intensified agriculture and horticulture throughout the State, and especially in the territory surrounding Columbus, give students unusual opportunity to observe the practical application of science in farming.

The laboratories, a farm of over four hundred acres, the various breeds of farm animals kept on the farm, as well as the numerous excellent herds and flocks available in the vicinity, give ample facilities for studying problems in these lines in technical agriculture.

The various orchards and small fruit plantations belonging to the University and accessible within the State show a wide range of methods and the development of a specialized culture.

The instructors in the scientific departments of the University are heartily in sympathy with agricultural work, and take great interest in scientific problems of immediate value to agriculture that students take up in the laboratories of these departments. The laboratories in the department of science most intimately connected with work in agriculture and horticulture are provided with extensive collections and apparatus giving excellent opportunity for the investigation of special problems.

Graduate School

All graduate work in the University is now given in the Graduate School of the University. The various departments

listed in this bulletin offer graduate work in a number of lines. For full particulars regarding the graduate courses, requirements for degrees, etc., see the bulletin of the Graduate School.

Departments Offering Graduate Work

The lines in which the various departments are best prepared to offer graduate work are as follows:

Agricultural Chemistry

Major graduate work may be taken along the lines of food inspection and analysis, human nutrition, animal nutrition, dairy chemistry or soil chemistry.

Agronomy

The graduate courses offered by the Department of Agronomy cover three fields of investigation:

- (1) Crops.
- (2) Soils.
- (3) Agricultural Engineering.

Two special graduate courses in crops are provided, one of which is designed to cover investigations in general crop production and the other to cover plant breeding investigations and other subjects directly related to crop improvement.

The graduate course in soils will include the preparation of monographs on the following topics:

- (1) Soil surveying and mapping.
- (2) The relation of soil types to crop production.
- (3) The influence of certain physical properties upon productive capacity.

Animal Husbandry

Special facilities are available for students who wish to take major work in Animal Husbandry. Each of the members of the department has a special line of research in which students may work or they may be directed in the investigation of any topics selected.

The topics named below can be taken up with particular advantages at this Institution:

- (a) Phases of the breeding or the management of dairy cattle.
- (b) Wools and other animal fibres.
- (c) Inheritance in farm animals.
- (d) The breeds of horses.
- (e) Live stock registration.
- (f) Breed history and development.
- (g) Live stock judging.

Work along any one of the above lines can be arranged for minor credit as well as for major.

Bacteriology

The courses offered in the Department of Bacteriology of special importance to graduate students in the College of Agriculture are as follows:

- (a) Advanced soil bacteriology, including studies on the bacterial diseases of soils.
- (b) Advanced dairy bacteriology, including studies on the handling of the various dairy products and their preparation.
- (c) Water bacteriology, dealing with the methods of examination and studies on the various methods of filtration.
- (d) Bacteriological chemistry; principally enzyme work.
- (e) Pathogenic bacteriology, with special reference to the disease bacteria in the soil.

Botany

Courses are offered by the Department along several lines of especial importance to agricultural students. These courses cover four fields of investigation as follows: (1) Plant cytology, including problems of heredity and special studies on chromosomes; (2) plant physiology, emphasis being placed upon the relation of the plant to the soil, together with a study of soil diseases; (3) mycology, including fungous diseases of cultivated plants; (4) systematic botany, with studies on various groups, as grasses, trees, etc.

Dairying

Students desiring graduate work in the Department of Dairying can arrange for work along any of the following lines:

- (a) Formulating rations for the economical production of milk and butter fat.
- (b) The production of sanitary milk in an economical manner.
- (c) The manufacture of butter, especially with reference to increased keeping quality.
- (d) The manufacture of a variety of cheeses.
- (e) Milk condensation.
- (f) The manufacture of fermented milk.
- (g) The manufacture of ice cream.

Geology

The Department of Geology offers work open to graduate students of the College of Agriculture along four distinct lines, viz.:

(1) Stratigraphic geology with trips for the field study of Ohio formations supplemented by laboratory study of specimens and literature (Course 105).

(2) Paleontology, which includes identification and description of the fossils of the Ohio and related formations (Course 107-108).

(3) Economic geology describing the metallic ores and the non-metals of the United States (Course 167).

(4) Glacial geology in which the glacial deposits of North America are described with field trips for the study of those found in Ohio (Course 106). Courses 105 and 106 constitute a year's work and are of particular importance in understanding the origin of the soils of Ohio.

Rural Economics

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and in agricultural economics.

Zoology and Entomology

The graduate work provided in this department covers especially the courses in Entomology, and in this subject it is possible for students to prepare themselves thoroughly for professional work either in teaching, experiment station work, or for government positions. Many of the graduates of the College are now occupying such positions in many different states, and in the government service. The courses available are Advanced Entomology Nos. 113 and 114, in case this has not been taken as an undergraduate course, and if it has been taken, it may be followed by special research courses Nos. 141 and 142, consisting of research work on entomological problems. The graduate course in Invertebrate Zoology, 247-248, is also available for more thorough preparation upon invertebrates in general.

For graduate students in Animal Husbandry, this department offers a course in quantitative studies in Variation, Heredity, and Animal Behavior, Nos. 129 and 130. In all of these courses the equipment is sufficient to enable the student to do work of an individual and distinctly advanced character.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY

(Townshend Hall.)

PROFESSORS VIVIAN AND WEBER, ASSOCIATE PROFESSOR LYMAN,
ASSISTANT PROFESSOR BEAR, MR. RUTH, MISS SMITH
AND ASSISTANTS.

The Department of Agricultural Chemistry occupies the second floor of Townshend Hall. Each desk contains a complete outfit of apparatus and chemicals necessary for the work in hand. Special apparatus and chemicals are supplied from the store room. Each desk is equipped with gas and water. Hoods for evaporation and generation of noxious gases and liquids are conveniently arranged on both sides and one end of the laboratory.

For Undergraduates

102. Application of Chemistry to Agriculture. Four credit hours. Second semester. Short courses in Agriculture and Horticulture. Professor Vivian.

Lectures and recitations embrace the following topics: Ingredients of plants, organic and inorganic, essential and non-essential; sources of plant food, air and soil; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, and preservation; commercial fertilizers, their rational use; methods of determining the needs of soils.

103-104. General Agricultural Chemistry. Five credit hours. The year. Four-year courses in Agriculture, Horticulture, and Forestry. Prerequisite, Chemistry 106 or 110. Professor Vivian, Assistant Professor Bear, and assistants.

Three lectures and two laboratory periods weekly. Lectures on chemistry as applied to agriculture, including the following topics: Food requirements of plants, sources of plant

food, soil exhaustion and amelioration, barnyard manures and commercial fertilizers, composition of feeding stuffs and dairy products. Laboratory work consists of a brief introduction to quantitative analysis, gravimetric and volumetric, followed by the analysis of fertilizers, feeding stuffs, and dairy products.

105-106. Advanced Agricultural Analysis. Five credit hours. The year. Prerequisite, 103-104. Professor Vivian and Assistant Professor Bear.

The work of this course consists of a detailed study of the official methods of determining nitrogen, potash, phosphoric acid; the complete analysis of grains and feeding stuffs, milk, butter, and cheese. Intended for students desiring to specialize in agricultural chemistry.

123-124. Domestic Science Chemistry. Five credit hours. Course in Domestic Science. The year. Prerequisite, Chemistry 106. Associate Professor Lyman and Miss Smith.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

For Advanced Undergraduates and Graduates

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, 103-104. Professors Vivian and Weber.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter, and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteids of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

109-110. Chemistry of Soils. Three to five credit hours. The year. For students specializing in agronomy. Prerequisite, Course 103-104. Professors Weber and Vivian, Assistant Professor Bear.

Lectures and laboratory work on the chemical composition of the soil, using the official method of analysis of soils, and the various methods suggested by the U. S. Department of Agriculture; testing needs of soil for application of commercial fertilizers.

111-112. Chemistry of Animal Nutrition. Three to five credit hours. The year. Prerequisites, 103-104 or equivalent. Professor Vivian.

For students specializing in animal husbandry.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, 103-104 or an equivalent preparation in quantitative analysis. Professor Weber, Associate Professor Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder; sanitary analysis of water; analysis of fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Advanced Household Chemistry. Three to five credit hours. The year. Prerequisite, 123-124. Professor Weber and Associate Professor Lyman.

A study of the composition and analysis of foods; the chemistry of cookery and changes during cooking, as shown by analysis; the examination of cleaning materials, baking powders, the sanitary analysis of water, etc.

For Graduate Students Only

131-132. Research Work. Five to ten credit hours. The year. Professor Vivian and Associate Professor Lyman.

(Courses 105 to 112, 121-122, and 125 to 126 may be taken as graduate work if not previously elected, or continued as special lines of research during a graduate course.)

AGRONOMY

(Townshend Hall.)

PROFESSOR M'CALL, ASSISTANT PROFESSORS RAMSOWER AND LIVINGSTON,
MR. DARST, AND MR. GRANT.

For the work in Agricultural Engineering, the department has a laboratory equipped with the latest types of farm machines, including plows, cultivators, corn planters, grain drills, binders, mowers, a half dozen gasoline engines showing the different systems of ignition, cooling devices, etc., a twenty-horsepower gasoline traction engine, a farmer's auto-delivery wagon, and a steam traction engine. Facilities are provided for the handling of cement and concrete in making fence posts, water troughs, etc. The department also has several drainage levels, six architect's levels, two surveyor's transits for use in laying out drainage systems, surveying fields, etc.

The soils laboratory is provided with apparatus for study of the physical properties of soils, including specific gravity, the retention of moisture, the effect of mulches on evaporation, the rate of percolation of water through soils and the capillary rise of moisture. The laboratory is also provided with a complete centrifugal outfit for the mechanical analysis of soils, and electrical instruments for determining temperature and soluble salt content.

In the study of crops use is made of a large collection of seeds, of dried specimens of grasses, grains, and other crops, and the growing crops on the farm. For the corn judging work, samples are secured of all the chief varieties grown in different sections of the corn belt, and opportunity is offered in the advanced courses to assist in judging at local corn shows. The market grades of grain and hay are studied by means of commercial samples secured from the chief markets. The department is supplied with Brown-Duval testers and ovens for the study of the moisture content of field crops in different stages of curing and under different processes of storage.

The variety test plots include all the principal Ohio varieties of corn, wheat, oats, barley, flax, sorghum, millet, soy beans, and cow peas, and the different species of grasses and legumes used for pastures and meadows, all grown side by side, so that a comparative study may be made as to the value of

each. Breeding plots of corn, wheat, alfalfa, clover, and timothy are maintained to give opportunity for the study of variation, correlation, selection, and other principles of plant breeding as well as the practical methods of crop improvement.

For Undergraduates

101. Farm Equipment. Four credit hours. Second semester. Prerequisite, Engineering Drawing 125. Assistant Professor Ramsower.

Lectures and recitations on the laying out and equipment of the farm, the planning of the farm buildings, and a detailed study of farm power, water supply, and farm machinery. Practicum in the laying out of farms, the planning of farm buildings, comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

102. Agricultural Engineering. Three credit hours. Second semester. Assistant Professor Ramsower.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size, depth and distance apart of tile; (c) roads; history of road building, kinds of roads, their construction and cost. Field work in differential leveling, laying out drainage systems, constructing road profile, and obtaining areas by chain and transit.

103. Farm Equipment. Four credit hours. First semester. Two-year courses in Agriculture and Horticulture. Assistant Professor Ramsower.

Lectures and practice covering the laying out and the equipment of the farm, the planning of buildings, and a general study of farm power, machinery, water supply, roads and drainage.

104. Elementary Soils. Four credit hours. Second semester. Prerequisite, Geology, 165 or 153. Four-year courses in Agriculture, Horticulture, and Forestry. Professor McCall.

Lecture and recitations on the origin, formation, and kinds of soil, their chemical and physical composition, and improvement by cultivation, fertilization, drainage, and irrigation. Laboratory studies of the physical properties of soils, and the factors which control soil fertility.

105. Elementary Soils. Four credit hours. First semester. Two-year courses in Agriculture and Horticulture. Professor McCall.

Lectures and recitations on the formation and physical properties of our agricultural soils, with special reference to methods of management and improvement. Practicum in the laboratory for the study of the relation of soils to air, heat, moisture, and fertilizers.

106. Field Crop Production. Four credit hours. First semester. Prerequisite, Botany 101 or its equivalent. Assistant Professor Livingston.

A study of the history, adaptation, distribution, and classification of the cereal crops, and the cultivation, harvesting, and marketing of the same throughout the great agricultural sections of the world, with special attention given to Ohio conditions.

108. Crop Production. Four credit hours. Second semester. Two-year course in Agriculture. Assistant Professor Livingston.

A study of the cultivation, harvesting, and utilization of the principal cereal and forage crops of the United States, with special reference to Ohio conditions.

109. Seed and Market Grain. Two credit hours. First semester. Prerequisite, Agronomy 106. Assistant Professor Livingston.

Seed selection; corn and small grain judging, and the market grading of grains.

111. Grasses and Forage Crops. Three credit hours. Second semester. Prerequisite, Botany 101 or its equivalent. Assistant Professor Livingston.

The study of the history, distribution, adaptation, characteristics, cultivation, harvesting, and marketing of the principal forage crops, including the grasses and legumes used for pastures and meadows, annual forage crops, soiling, and silo crops. Laboratory work in the study of methods of preparing the seed bed, root systems of forage plants, root nodules and inoculation of legumes, moisture content of forage crops, com-

parison of silage methods, comparative study of annual forage crops, and seed testing for purity and germination.

***114. Advanced Farm Machinery.** Two credit hours. Second semester. Prerequisite, Agronomy 101. Assistant Professor Ramsower.

A detailed study of the construction of farm machinery. Expert work in assembling and testing grain binders, corn harvesters, mowers, etc. Efficiency tests of gasoline and steam engines.

121. Farm Architecture. Two credit hours. First semester. Prerequisite, Drawing 125. Assistant Professor Ramsower.

Lectures covering the properties of materials used in the construction of farm buildings: timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

For Advanced Undergraduates and Graduates

107. Advanced Soils. Four credit hours. First semester. Prerequisite, Agronomy 104 or 105. Professor McCall.

Lectures on (a) general character and the distribution of the more important soil types of the United States and their adaptability to crops, (b) the factors underlying soil fertility, with special reference to the effect of different methods of cultivation and cropping. The lectures will be supplemented by field trips for the identification and mapping of soil types and by laboratory work, which will include the mechanical analysis of soils and a study of their physical behavior.

110. Agricultural Experimentation. Three credit hours. Second semester. Lecture arranged. Professor McCall.

Lectures upon history and development of experiment stations, methods and character of station work, and the interpretation of experimental results. Seminars devoted to critical study of experiment station literature, and to the methods of experimentation.

* Not given 1912-13.

113. Field Crop Improvement. Three credit hours. First semester. Prerequisite, Agronomy 106. Professor McCall.

A study of the principles involved and the methods used in the movement of field crops.

For Graduates Only

Special work in soils and crops is offered for students desiring to take a graduate course in agronomy. Students taking this work will be given an opportunity to prepare for work in the United States Department of Agriculture and for college and experiment station positions.

115-116. Advanced Crop Production. Five to ten credit hours. The year.

Research and monograph work in one or more of the cereal or forage crops.

117-118. Advanced Crop Improvement. Five to ten credit hours. The year.

Research work in plant breeding, the study of plant breeding experiments at the University and at the State Experiment Station, and the investigation of crop improvement work in other states and countries.

119-120. Research Work in Soils. Five to ten credit hours. The year.

The preparation of monographs and special laboratory or field work on topics connected with the subject of soils, including (a) methods of surveying and mapping, (b) the relation of soil types to crop production, and (c) the influence of certain physical properties upon crop production.

AMERICAN HISTORY

(Office, Room 207, University Hall.)

PROFESSOR KNIGHT, ASSOCIATE PROFESSOR HOCKETT.

101-102. Political History of the United States. Three credit hours. The year. Professor Knight, Associate Professor Hockett, Assistant Professor Coker.

An outline course covering the period 1600-1900, considering political, economic, and personal aspects of American history from the origins to the present day. The Epochs series, by Thwaites, Hart, and Wilson, and MacDonald's Documentary Source Book of American History, will be used as text-books, supplemented by outside reading. Recitations and reports.

ANATOMY AND PHYSIOLOGY.

(Biological Hall, Rooms 12 to 21.)

PROFESSOR BLEILE, ASSOCIATE PROFESSOR SEYMOUR, ASSISTANT
PROFESSOR DURRANT, MR. FEIEL.

The facilities provided for the study of anatomy, histology, and physiology are good. The laboratory is supplied with skeletons, manikin, and many models of the organs of the body. The apparatus for work in physiology is of good construction and adequate for the performance of fundamental physiological experiments.

For work in histology, the equipment includes sixty individual tables for student work, each one being supplied with a good microscope and the various accessories. The equipment of the laboratories makes it possible to offer work along certain lines to advanced students.

101-102. Human Anatomy and Physiology. Three credit hours. The year. This course must be preceded by a course in chemistry. Professor Bleile, Associate Professor Seymour, Assistant Professor Durrant.

103. General Physiology. Three credit hours. First semester. Short course in Agriculture. Assistant Professor Durrant.

104. Chemical Physiology. Three credit hours. Second semester. Professor Bleile.

ANIMAL HUSBANDRY

(Live Stock Pavilion.)

PROFESSORS PLUMB AND MARSHALL, ASSISTANT PROFESSOR VAUGHAN,
MR. JACOBY.

The University herd contains a large number of valuable, high-class animals. These include excellent specimens for class room work of pure bred Shorthorn, Aberdeen Angus, Jersey, Guernsey, Holstein-Freisian, Kerry, and Red Polled cattle, and a variety of grade and pure bred beef steers. Good specimens of Merino, Southdown, Shropshire, and Cotswold sheep, and Berkshire, Poland China, Duroc-Jersey, and Large Yorkshire swine are also kept. For years the Department has shown specimens of the University stock at the International Live Stock Exposition, where numerous important prizes have been won. These show animals are used extensively in the judging work of the students. The University owns some choice pure bred Percheron, Clydesdale, and Hackney mares, and good specimens of work horses. In addition to this, at convenient distances, are famous studs of imported Percheron, French Coach, German Coach, and Belgian horses. Students are conducted to Columbus stables containing large numbers of horses, and to stock farms about Columbus and in neighboring counties, where methods of feeding and handling may be studied and animals inspected. Each year a class of students attends the International Live Stock Exposition at Chicago in charge of instructors, spending a few days among the stock exhibits, the Union stock yards, and packing houses. Class room facilities in animal husbandry are of a high order. The judging pavilion for live stock is a beautiful brick structure, having a room 112 feet long, with tan-bark floor, on which stock may be shown to the best advantage. This building, with the new cattle and horse barns, all constructed in 1907 at a cost of \$80,000, gives the University the finest facilities for teaching Animal Husbandry. As additional facilities for instruction, the University has a superior collection of herd, flock, and stud books of the various American and European breeding associations. These are used in laboratory work in the Principles of Breeding and the study of breeds. There is also a large collection of lantern slides of breeds and types of animals, various instruments for measuring and studying stock, specimens of feeding stuffs, wools, and other animal products.

Four-Year Course

101. Types and Classes of Cattle and Sheep. Four credit hours. First semester. Assistant Professor Vaughan.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Professor Marshall, Assistant Professor Vaughan.

A discussion of the various types, classes and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Professor Plumb, Professor Marshall.

Lectures, text-books, and recitations upon the history, development, characteristics, and adaptations of types and breeds of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Professor Plumb, Professor Marshall.

Covers the subject of cattle and swine on the same basis as Course 103.

105. Feeding Animals. Three credit hours. First semester. Professor Vivian, Professor Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations and in studying rations in practical use in the community and suggesting improvements if desirable. The economy of the subject is carefully considered. Professor Vivian has charge of the class the first part of the semester on the subject of the chemistry of foods and nutrition, Professor Plumb taking the balance of the semester in a discussion of practical feeding problems.

106. Principles of Breeding. Four credit hours. Second semester. Professor Marshall.

Lectures, text-books, and recitations upon the subjects of heredity from various points of view in its application to breeding farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction, and working out problems in heredity from herd books. Students taking this course should have had either Course 103 or 104, and preferably both. Also the course in Zoology in the Freshman year.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Professor Marshall and Assistant Professor Vaughan.

This is an advanced class for students who have already had the work of the Junior year in Courses 103 and 104. The purpose is to give a more detailed consideration to type and breed conformation, with an emphasis on practice in judging groups and classes and rendering required reasons therefore. Only students who have generally covered certain necessary judging work are expected to take this course.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period. This course should be preceded by 105 and 106. Professor Marshall.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool, and pork.

109. Horse Training, Harness and Vehicle. Two credit hours. First semester. Professor Marshall.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. One credit hour. Second semester. Professor Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. Second semester. Professor Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practices of the live stock markets and yards, the market classification and grading, the export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market development. Visits are also made to stock yards, transportation agencies, packing houses, etc.

114. Biographical Studies of Master Breeders. One credit hour. Second semester. Time to be arranged. Professor Plumb.

A series of lectures discussing the lives and methods of famous master breeders of live stock.

116. Dairy Cattle. Four credit hours. Second semester. Professor Plumb.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year. Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management. Mr. Jacoby.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus.

120. Poultry Feeding. One credit hour. Second semester. Practice work in feeding and caring for a flock of fowls for one month, to be assigned. Mr. Jacoby.

Each student will be required to visit the poultry plant morning, noon and afternoon to do the necessary work and keep the records of a pen of fowls.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

125. Feeding Animals. Three credit hours. First semester.

A general consideration of the subject of animal nutrition and practical feeding. A text book will be used with this class.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Time to be arranged. Professor Plumb.

Lectures and seminary work on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practice in shearing is required.

129-130. Types and Breeds of Live Stock. Four credit hours. The year. Assistant Professor Vaughan.

Text-book and discussion on the history, characteristics, adaptability, economic value, etc., of types and breeds of live stock. Practical work in judging one afternoon a week, both score card and comparative group work being used.

132. Types and Breeds of Live Stock. Three credit hours. Third year. Second semester. Elective. Professor Marshall.

For veterinary college students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle as coming within the field of the veterinary practitioner.

Two Year Course

123. Dairy Cattle. Four credit hours. First semester. Laboratory to be arranged. Professor Plumb.

Text-book and discussion of the history, characteristics, economic value, etc., of breeds of dairy cattle. Practical work in judging one afternoon a week, various methods being used. Herds of cattle in the vicinity will be visited.

128. Feeding and Breeding of Animals. Three credit hours. Second semester. Assistant Professor Vaughan.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions occupies the first half of the semester. The second half is given to the principles of breeding; text-book, lectures, and recitations being required. Pedigree study and problems in heredity occupy the laboratory period.

Graduate Work

Graduate Work in Animal Husbandry will be provided in this department to suit the needs of the student, under the general rules of the University for this work.

Courses are offered as lines of special study under departmental direction. Special investigational facilities are at hand, in the use of the University stables, the laboratory in agricultural chemistry, the extensive library of works on animal husbandry, the large stables in and about Columbus, etc. No animal husbandry department in America has at its disposal a more comprehensive supply of material for the student of the horse.

ARCHITECTURE

(Office, Brown Hall.)

PROFESSOR BRADFORD, ASSOCIATE PROFESSOR CHUBB, MR. HASKETT.

101-102. History of Architecture. Three credit hours. The year. Lectures illustrated by lantern slides. Professor Bradford.

ART

(Office, Hayes Hall.)

PROFESSOR LAVER, MISS FINNEY, MISS ROBINSON.

101-102. Design and Composition. Two credit hours. The year. Professor Laver, Miss Robinson.

This course is designed to develop appreciation of harmony of line, space, and color. It brings into play the creative imagination and establishes a basis for critical judgment along all art lines. Medium: Pencil, ink, and water color.

105-106. Design and Composition. Two credit hours. The year. Prerequisite, Course 102. Miss Finney.

Continuation of Art 102 with advanced problems in color and line as applied to decoration.

BACTERIOLOGY

(Office, Veterinary Laboratory Building.)

PROFESSORS MORREY AND M'CAMPBELL, ASSISTANT PROFESSOR STARIN.

These courses in Bacteriology, except 105, are open to advanced undergraduate and graduate students only. The instructor in charge must be consulted before electing.

104. Agricultural Bacteriology. Three credit hours. Second semester. For two-year courses in Agriculture and Horticulture. Assistant Professor Starin.

107. General Bacteriology. Three to five credit hours. First semester. Professors Morrey and McCampbell and Assistant Professor Starin.

108. Pathogenic Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Professors Morrey and McCampbell, Assistant Professor Starin.

110. Dairy Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Professor Morrey.

112. Soil Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Professor Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Courses 107 and 110, or equivalents. Professor Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisites, Courses 107 and 112, or equivalents. Professor Morrey.

BIBLIOGRAPHY

(Office, Orton Hall.)

MISS JONES AND MR. REEDER.

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

A required course for students in the College of Agriculture. This course consists of lectures and problems on the use of reference books, indexes, catalogues, and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

(Office, Botanical Hall.)

PROFESSOR SCHAFFNER, ASSISTANT PROFESSORS GRIGGS AND DACH-
NOWSKI, MISS DETMERS.

The department offers good facilities for instruction and investigation. The museum contains a large amount of material, illustrative of the various groups of plants, the collection of Ohio woods being complete. There is a good general herbarium and the State herbarium consists of about thirty thousand sheets of Ohio plants. The laboratories are well equipped with dissecting and compound microscopes, also the usual appliances for doing both elementary and advanced morphological and physiological work. The greenhouse attached to the Botanical Building is an important adjunct to the department, furnishing much fresh material for study. It is also used as a laboratory for certain phases of the work in plant physiology.

101-102. General Botany. Four credit hours. The year. Text-books, Curtis's *Nature and Development of Plants* (2d edition), Schaffner's *Laboratory Outlines for General Botany* (2d edition). Professor Schaffner, Assistant Professor Griggs. Miss Detmers.

This course gives a general survey of the plant kingdom by the comparative method of morphological types and life cycles. It is intended to present a general view of the morphology, evolution and classification of plants from the lowest to the highest.

110. Dendrology. Two credit hours. Second semester. Text-book, Schaffner's *Trees of Ohio and Surrounding Territory*. Professor Schaffner.

A study of trees and shrubs, with practice in the identification of woody plants, both in summer and winter condition. Students are required to prepare a dendrological herbarium.

112. Elementary Botany. Four credit hours. Second semester. Text-books, Bergen and Caldwell's Practical Botany, and Kellerman's Spring-Flora (New edition). Miss Detmers.

This is a general elementary course, consisting mostly of organography, plant physiology and a study of the native flora, but some instruction is also given in ecology and classification and the economic phases of the subject. The students are required to do work in the field both in observation and collecting.

This course cannot be used for university credit.

116. Plant Pathology. Three credit hours. Second semester. Prerequisite, Botany 101-102, or equivalent. Text-book, Duggar's Fungous Diseases of Plants. Assistant Professor Griggs.

The diseases of plants due to physical causes and animals are briefly considered, but the main part of the course is devoted to a study of the parasitic fungi most destructive to cultivated plants. Each student takes some economic subject or group of parasites for special study and is required to prepare a complete report on the same.

117-118. Forest Botany. Four credit hours. The year. Prerequisite, Botany 101-102 or equivalent. Assistant Professor Dachnowski.

In this course the emphasis is laid on the ecological study of forests. It includes work on the native and introduced trees and the preparation of a dendrological herbarium, together with a floristic study of some special group. This is supplemented by a study of the development of woods, characters of coniferous, hard, and soft woods and changes due to attacks of fungi. The students are required to prepare a series of gross and microscopic sections. A study is also made of the genetic development of local forests, and of the fungi injurious to trees and wood.

121. Plant Genetics. Two credit hours. First semester. One lecture, one laboratory period. Prerequisite, Botany 101-102 and one additional year of some biological subject. Students electing this course should also take Zoology 129. Professor Schaffner.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, variations and mutations, together with methods of procedure in crossing both lower and higher plant forms.

125-126. Plant Physiology. Four credit hours. The year. Laboratory and field work. Prerequisite, Botany 101-102, or equivalent. Assistant Professor Dachnowski.

The course is an experimental study of the soil, air, and biotic relations of plants. It aims to give training and instruction in such phases of nutrition, growth, movement, and the tropisms of plants as have a practical bearing on agriculture, forestry, and general biology.

CHEMISTRY

(Office, Chemistry Hall.)

PROFESSORS M'PHERSON AND EVANS, ASSOCIATE PROFESSOR WITHROW,
DEPARTMENT ASSISTANTS.

The laboratories of the department accommodate over twelve hundred students. Each laboratory is equipped with all necessary conveniences—water, gas, electric lights, distilled water piped from a large still in the attic, steam ovens, automatic air blasts, suction pumps, etc. The department is liberally supplied with the best apparatus and materials for both lecture-room and laboratory work. Each student has his own desk with drawers and locker. All supplies are procured from the chemical store room, which has always on hand a complete stock of all necessary materials.

101. Elementary Chemistry. Four credit hours. First semester. One lecture, one quiz, six hours laboratory work weekly. Professor Evans, Mr. Witzemann.

A general introductory course on the chemistry of the non-metals. It is distinctly elementary in character and is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses. Students taking this course should follow with Course 102, second semester.

102. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. One lecture, one quiz, six hours laboratory work weekly. Prerequisite, Course 101. Professor Evans, Mr. Witzemann.

A general introductory course on the chemistry of the metals. The laboratory work deals with the elementary principles of qualitative analysis. The course is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses.

105. Elementary Chemistry. Four credit hours. First semester. Professor Evans, Mr. Stratton, Mr. Davison.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Course 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 105. Professor Evans, Mr. Stratton, Mr. Davison.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. First semester. One lecture, one quiz, six hours laboratory work weekly. Professor Evans, Mr. Kellogg, Mr. Witzemann and Mr. Van Sickle.

A general course on the chemistry of the non-metals. It is more advanced than Course 105, and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Course 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 109. Time same as Course 109. Professor Evans, Mr. Kellogg, Mr. Van Sickle, and Mr. Witzemann.

A general course on the chemistry of the metals. It is more advanced than Course 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Five credit hours. First semester. Two lectures, one quiz, six hours laboratory work weekly. Prerequisite, an acceptable course in general chemistry. Professor McPherson, Miss Maclean.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Two lectures weekly. Prerequisite, an acceptable course in general chemistry and qualitative analysis; also in quantitative analysis except by special permission of the instructor. Professor McPherson.

This is a general course in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine hours laboratory work weekly. Laboratory open afternoons. This course must be accompanied or preceded by Course 151-152. Professor McPherson, Mr. Boord.

A general course in the preparation of typical organic compounds.

CIVIL ENGINEERING

(Office, Brown Hall, Room 33.)

MR. WAID, MR. WARD.

121. Surveying and Topographic Drawing. Six credit hours. First semester. Prerequisite, Mathematics 114 or 132, and Engineering Drawing 101.

The work will be divided into lectures, recitations, field work, computing, and drawing in such manner as the schedule and weather will permit.

DAIRYING

(Office, Townshend Hall.)

PROFESSOR ERF, ASSISTANT PROFESSOR CUNNINGHAM, MR. CLEVINGER.
MR. RINEHART.

The department of dairying occupies the greater part of the first floor of Townshend Hall. It offers good facilities for instruction and investigation. The laboratories are equipped for the following lines of work: Milk testing, care and bottling of sanitary milk, butter making, cheese making, ice-cream making, milk condensing, dairy mechanics,

Individual milk testing apparatus is furnished to each student. In the laboratory are found Babcock centrifuges, balances, etc., to make a complete test of the milk. The department operates a commercial, guaranteed milk and cream distributing plant. It has its own wagons for distributing the products and is equipped with modern milk dealers' implements, such as bottlers, washing outfits, and steam pressure sterilizers. In connection with this plant there is also a refrigerator provided for the bottled milk. The milk is received from two sources, part from an inspected farm and the balance from the University herd. The milk is bottled and sold, the students doing the work.

The farm cream separator laboratory is equipped with various styles of cream separators and coolers. The creamery laboratory is equipped with different types of cream ripeners, pasteurizers, starter cans, churns and printers. Butter is made throughout the year on a commercial basis from milk and cream received from a number of dairies aggregating over 300 cows, and the plant is operated on a regular commercial scale with students doing most of the work. The cheese making laboratory is equipped with a cold curing room and a cellar for making brick and Swiss cheese. Cream cheeses are made each week as a part of the commercial products of the laboratory and instruction is given along this line during the college year. The ice-cream making laboratory is equipped with freezers, brine and ice, and the proper mixing contrivances. A laboratory is provided for milk condensing where a condensing plant is operated for instructional purposes.

Dairy mechanics work is provided for in special laboratories, which are equipped with boilers, engines, a refrigerating plant, pumps, pipe fitting apparatus, and soldering outfit. The laboratory work is of the most practical kind and is supplemented by lectures, recitations and quizzes in the class room.

Lectures and practical demonstrations are given in dairy farm work, especial attention being paid to the Advanced Registry and Cow Testing Association work. The department has charge of this work in Ohio.

The work of the department is designed for three classes of students, the regular students in the two and four-year courses, and the students of the special dairy courses. The

latter is arranged for the practical dairyman who cannot devote a longer time to the scientific study of dairy methods.

Four-Year Course

101. Principles of Dairying. Four credit hours. First semester. Professor Erf, Assistant Professor Cunningham, Mr. Rinehart.

Lectures are given on secretion of milk and the testing of milk and cream for butter fat; feeding and caring for dairy cows as related to the economical production of milk; formation of profitable herds; testing individual cows and herds for butter fat production, and entering and testing cows for the Advanced Registries. In the laboratory, practical work will be given in testing milk and cream for butter fat, testing dairy herds for butter fat production, the practice of operating farm cream separators, the care of milk and cream, buttermaking, and cheesemaking, also plumbing and soldering as needed in dairy operations.

102. Farm Dairying. Four credit hours. Second semester. Professor Erf, Assistant Professor Cunningham.

Lectures will be given on the planning and equipping of dairy barns, milk houses, dairy plants, farm milk houses, refrigerators and arranging of yards. Lectures will also be given on the handling and manufacturing of farm dairy products for the market, dairy farm management, and a study of the comparison of the different systems under various conditions. The laboratory work will consist of designing dairy barns, dairy plants, dairy houses, refrigerators, etc., the setting up and operating of dairy machinery, scoring dairy farms and dairy plants.

103 or 104. City Milk Supply. Two credit hours. First or second semester. Assistant Professor Cunningham.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking, cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105 or 106. Buttermaking. Five credit hours. First semester and repeated in the second semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107 or 108. Cheesemaking. Three credit hours. First semester and repeated in the second semester. Mr. Clevenger, Mr. Rinehart.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cottage, cream, Cheddar, and brick cheeses.

110. Ice-Cream Making and Milk Condensing. Five credit hours. Second semester. Time to be arranged. Assistant Professor Cunningham.

Lectures will be given on the theory of milk condensation and ice-cream making. Practical work with the vacuum pans and sterilizers will be given in the condensing laboratory and practical work in ice-cream making, in the ice-cream laboratory.

111. Dairy Mechanics. Three credit hours. First semester. Mr. Clevenger.

This work consists of one hour lectures and three hour laboratory work. It treats of the construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, hanging of shafting, and pulleys, pipe fitting and soldering, and the operating of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Three credit hours. The year. Professor Erf.

Seminar on assigned readings in experiment station and other dairy literature will be arranged in this course. Investigation work of special character along any particular line of dairying will be arranged for. Laboratory work will be provided in connection with this work.

117-118. Advanced Dairying. Five to ten credit hours. The year. Professor Erf.

This course is intended for graduate students.

Special work will be arranged for students desiring to take up any particular phase of dairying. Any apparatus on hand will be furnished and room will be arranged for students desiring to take up any line. such as farm dairying, the feeding and breeding of dairy cows in relation to milk production, the study of milk in its various phases, buttermaking, cheesemaking, milk condensing, ice-cream making, etc.

Two-Year Course

109. Elementary Dairying. Four hours. First semester. The work offered in this course is similar, in the main, to Course 101. Professor Erf, Assistant Professor Cunningham, Mr. Rinehart.

DOMESTIC SCIENCE

(Office, Hayes Hall.)

PROFESSOR WARDALL, ASSOCIATE PROFESSOR WHITE, MISS BLOHM,
MISS CRANE.

I. Domestic Science

101-102. Foods. Four credit hours. The year. Prerequisite, Chemistry, 106 or 110. Associate Professor White.

A study of nutritive principles; their occurrence in ordinary food stuffs, their cost from various sources, and the principles involved in their preparation. Lectures and recitations are combined with laboratory work.

103. Dietetics. First semester. Four credit hours. Prerequisite, Domestic Science 101-102, Physiology 101-102, and Agricultural Chemistry 123-124. Professor Wardall.

A study of the chemical, physiological, and economic factors entering into the normal diet, examination of dietary standards and views of different workers. Some attention to abnormal diet will be given. Laboratory work includes trans-

lation of standard dietaries into food materials and some exercise in making dietary studies. Practice is also given in preparation of food for the sick.

104. The House. Three credit hours. Second semester. Associate Professor White.

Situation of the house with regard to general surroundings. The householder's interest in the construction of the house. Sanitary conditions in and around the house. Ventilation, water supply, heating, and plumbing. The purpose of the house. Prerequisite, Bacteriology 107.

105-106. Seminar. Two to five credit hours. The year. Open only to fourth year and graduate students. Professor Wardall.

107. Household Management. Three credit hours. First semester. Prerequisite, Courses 101-102, Economics 135-136 or 138. Associate Professor White.

The aim of this course is to set forth some of the principles underlying housekeeping, including the organization of the household, division of income, household processes, and care of the household.

108. Teachers' Course. Three credit hours. Second semester. Open to seniors. Professor Wardall.

II. Domestic Art

101-102. Textiles. Two credit hours. The year. Prerequisite or concurrent, Art 101-102. Miss Blohm.

This course includes the study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of articles involves the proper selection of material and the working out of suitable designs.

103. Dress. Three credit hours. First semester. Prerequisite, Domestic Art 101-102; Art 105-106 must be taken with this work. Miss Blohm.

In this course economics, hygiene, design, and color are considered in their relation to dress. The laboratory work includes the drafting and designing of patterns, the careful selection and combination of materials, and the making of dresses.

104. Household Art. Three credit hours. Second semester. Prerequisite, or Concurrent, Art 105-106. Miss Blohm.

This course includes the study of house furnishings, their color, design, and suitability for purpose and cost. The laboratory work consists of visits to shops, the making of plans and estimates for house furnishing, the designing and making of accessories in furnishing and decorating the house.

Note.—In all courses students provide their own materials.

***105. Teachers' Course.** Three credit hours. First semester. Prerequisite, Courses 101-102, 103 and 104.

106. Dress. Three credit hours. Second semester. Continuation and amplification of Course 103.

DRAWING

(See Engineering Drawing.)

ECONOMICS AND SOCIOLOGY

(Office, Room 211, University Hall.)

PROFESSORS HAGERTY, HAMMOND AND GEPHART, ASSOCIATE PROFESSOR MCKENZIE, ASSISTANT PROFESSORS LOCKHART AND HUNTINGTON, MISS SHEETS, MR. WALRADT.

I. Economics

135-136. Principles of Economics. Three credit hours. The year. Professor Hammond, Assistant Professors Lockhart and Gephart, Mr. Walradt.

A careful study of the laws of production, exchange, distribution, and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures, and individual investigations.

138. Principles of Economics. Five credit hours. First semester. Open only to students in Domestic Science and Domestic Art.

*Not given in 1912-13.

141. Public Finance. Two credit hours. First semester. Prerequisite, Economics 135-136. Assistant Professor Lockhart.

Public expenditures; sources of revenue, with special reference to problems of taxation; public credit; the budget; financial administration.

142. Financial History of the United States. Two credit hours. Second semester. Prerequisite, Economics 135-136. Assistant Professor Lockhart.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans, financial administration, currency legislation, and the development of banking institutions.

***167. Railway Economics.** Three credit hours. First semester. Prerequisite, Economics 135-136. Professor Hammond.

The development of means of transportation. Railway growth and consolidation. Railway rate theories and practice. Railway commissions and public control. Government ownership of railroads.

***168. Railway Organization and Administration.** Three credit hours. Second semester. Prerequisite, Course 167. Professor Hammond.

The organization of modern railway systems and the functions of the various departments. Rate making and the work of the traffic department. The work of the industrial commissioner. Railway finance and statistics. The relation of the railroads to the accounting division of the Interstate Commerce Commission.

II. Sociology

101-102. Principles of Sociology. Three credit hours. The year. Professor Hagerty. Associate Professor McKenzie, Miss Sheets.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading, and individual investigation.

*Not given 1912-13.

107. The Family. Three credit hours. First semester. Prerequisite, Sociology 101-102. Miss Sheets.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions, and its problems.

120. The Household. Three credit hours. Second semester. Prerequisite, Sociology 119. Miss Sheets.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman. This course will also consider the present organization of the household from the point of view of its efficiency, and the meaning of the changes which it is undergoing.

122. Principles of Sociology. Five credit hours. Second semester. Open only to students in Domestic Science and Domestic Art.

A study of the evolution of society, the physical environment of man, the biological and racial factors, group formation and structure, social psychology, social control, social pathology, institutional sociology, and social progress.

ENGINEERING DRAWING

(Office, Room 42, Brown Hall.)

PROFESSOR FRENCH, ASSISTANT PROFESSOR MEIKLEJOHN, MR. HARPER,
MR. SHEETS, MR. TURNBULL, MR. NORRIS.

101. Elementary Mechanical Drawing. Two credit hours. First semester.

116. Pen Drawing. Two credit hours. Second semester.

119. Clay Modeling. Two credit hours. First semester.

125. Mechanical Drawing. Two credit hours. First semester.

126. Repetition of 125.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Drawing 127.

127 and 128 are required in Domestic Science, second year.

137. Engineering Drawing. Two credit hours. First semester. Prerequisite, Drawing 101.

A course especially for forestry students. Practice in topographic drawing, tracing and blue-printing, and the design of simple engineering structures, such as culverts, trestles, small wooden bridges, and dams.

138. Engineering Drawing. Two credit hours. Second semester. Continuation of 137.

ENGLISH

(English Building.)

PROFESSORS DENNEY, TAYLOR AND M'KNIGHT, ASSOCIATE PROFESSOR GRAVES, ASSISTANT PROFESSORS DUNCAN, BLANCHARD, BECK.

101. Paragraph Writing. Description and Narration. Two credit hours. First semester. (Course 101 will be repeated in the second semester as Course 102 for the benefit of those who fail, the class meeting Saturdays at 9 a. m.) All instructors.

104. Paragraph Writing. Exposition and Argumentation. Two credit hours. Second semester. Prerequisite, Course 101. Same hours as for Course 101. (Course 104 is also offered in the Summer Session.) All instructors.

107. Advanced Description and Narration. Two credit hours. First semester. Prerequisite, Course 101. Associate Professor Graves.

108. Advanced Exposition and Criticism. Second semester. Prerequisite Course 101. Associate Professor Graves.

121. Principles of Public Speaking. Two credit hours. First semester. Assistant Professor Blanchard.

122. Debating. Two credit hours. Second semester. Assistant Professor Blanchard.

132. Survey of American Literature. Three credit hours. Second semester. No prerequisite course. Professors Taylor and McKnight, Associate Professor Graves, Assistant Professors Duncan and Beck.

133. Survey of English Literature. Three credit hours. First semester. No prerequisite course. Professor McKnight, Associate Professor Graves, Assistant Professors Duncan and Beck.

FORESTRY

(Horticultural Hall.)

PROFESSOR LAZENBY MR. GOETZ, MR. PFLUEGER

For field work in Forestry, the University estate has a typical primitive woodlot, a fringe of forest trees bordering the Olentangy river, and a good collection of individual trees and shrubs on the campus. Columbus and vicinity offer fairly good opportunities for the study of forestry. Numerous electric car lines take the students, at small cost, to a variety of hard wood forests where different conditions and methods of treatment can be studied. Lumber yards, dry houses, wood working industries, and saw mills are to be found in and near Columbus.

In laboratory work, students receive instruction in timber physics and certain features of wood technology, and for this a collection of wood specimens, sections of trees, etc., are provided, and will be increased as rapidly as possible. Students will be encouraged to carry on original work, and to write theses under the supervision of an instructor. Special credit is given for such work, but a thesis is not required for a degree.

The University library contains a good and rapidly growing collection of books and pamphlets on forestry, and quite a number of forestry journals are regularly received.

The department is equipped with a collection of apparatus and woodsman's tools for use in the laboratory and forest.

101. Introduction to Forestry. Two credit hours. First semester.

A general presentation of the subject, its objects, methods, and economic importance. A study of the trees and shrubs in the University woodlot and on the campus. Lectures and field work.

102. Introduction to Forestry. Two credit hours. Second semester.

A survey of forest literature and forest organizations, including state and national forest services. A continuation of the study of local trees and shrubs from the forester's standpoint. Lectures and field work.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Lectures, class room, and field work.

The cultivation and management of trees for various specific purposes, such as windbreaks, hedges, shade and ornament, small plantations for post and pole timber, for maple syrup, for nuts, the farmer's woodlot, treatment of diseased and injured trees, etc.

The above courses, while designed for forestry students, are open and adapted to students of other departments.

105. Silviculture. Three credit hours. First semester.

Lectures and field work. Includes a review of soil, climate, exposure and other ecological factors influencing forest growth; descriptions of typical woodlands and forests; collecting and testing forest tree seeds. Care of woodlands and forests, including natural regeneration, pruning, thinning, protection from fire and other inanimate enemies.

106. Silviculture. Three credit hours. Second semester.

Lectures and field work. Forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation; practice in seedbeds and nursery; sowing seeds and transplanting in forests; establishment, improvement and extension of wood lots; protection from insects and other animate enemies.

107. Forest Mensuration, Valuation, and Timber Physics. Four credit hours. First semester.

Lectures, laboratory, and field work. Methods of measuring the volumes of felled and standing trees; of ascertaining the volume of definite forest areas; studying the age, rate of growth and future yield of trees and forests; making stem or section analysis; surveys and estimates of values of trees and forest stands.

The physical properties of wood; wood working plants and industries; uses of wood and wood preservation.

108. Forest Utilization and Lumbering. Four credit hours. Second semester.

Lectures and field work. Methods of lumbering, including transportation, milling, and marketing; minor wood lot and forest industries; by-products of the forest; camping and packing; first aid to sick and wounded.

109. Forest History, Relations and Management. Four credit hours. First semester.

Lectures and seminar; evolution of forests; statistics of areas, product, and trade; relation of forests to climate, soil, waterways, and general welfare; general forest conditions; surveys and working plans.

110. Forest Economics and Policies. Four credit hours. Second semester.

Lectures and seminar; state and national forest laws and organization; state and national forests, and forest problems; civil service regulations; foreign forest service; forest administration.

GEOLOGY

(Office, Room 1, Orton Hall.)

PROFESSORS PROSSER AND BOWNOCKER, ASSISTANT PROFESSOR HILLS.
MR. MORSE, MISS MARK.

The University offers excellent facilities for the study of geology. By an act of the Legislature it has been put in possession of all the collections made by the State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. These collections embrace a representation of every geological formation shown in Ohio. Orton Hall, completed at a cost of more than \$100,000, is designed for the permanent accommodation of the large geological collections of the University, and for the work and instruction of the Department of Geology. A portion of it, at present, is occupied by the Library and reading rooms. The building is two stories in height, with a high basement; is built of brick and faced with sandstone, and is fire-

proof throughout. Some of the material was contributed by various quarries of the State of Ohio, and almost all of the finer varieties of Ohio building stone are represented in the columns, walls, and ceiling panels of the vestibule.

152. General Geology. Three credit hours. Second semester. Geology 165 repeated. Professor Prosser and Mr. Morse.

153. Applied Geology. Three credit hours. First semester. Prerequisite, Geology 165 or 152. Professor Bownocker and Assistant Professor Hills.

The common minerals and rocks of the earth's crust, their breaking down and the formation of mantle rock, fuels, building stones, lime, cement, and the most useful metals are studied.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere, and the ocean. Recitations, lectures, and map work. One period per week will be devoted to laboratory or field work.

165. General Geology. Three credit hours. First semester.

The first half of the semester, or while the weather permits, field trips will alternate with the laboratory periods. Field trips Friday afternoon or Saturday morning, when the laboratory work will be omitted for that week. Professor Prosser and Mr. Morse.

Structural, dynamical, and historical geology. The lectures are illustrated by maps, specimens, and lantern views. The common rock-forming minerals and rocks are studied in the laboratory; while in the field various illustrations of geological structure are pointed out and formations identified.

For Advanced Undergraduates and Graduates

For prerequisites for the following courses see the Graduate Bulletin.

105. Field Geology. First semester. Three to five credit hours. Professor Prosser.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

Study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurements of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three hours. Second semester. Professor Bownocker.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Laboratory open afternoons, 1 to 4, and on certain days in the morning. Professor Prosser and Mr. Morse.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the faunas that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work, fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of faunas is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three or more hours. First semester. Professor Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin; the non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals, emphasis will be laid on the products of Ohio.

GERMAN

(Offices, Rooms 317 and 318, University Hall.)

PROFESSOR EVANS, ASSOCIATE PROFESSOR EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS AND LEWISOHN, MR. BUSEY.

101-102. Elementary German. Four credit hours. The year.

103. Intermediate German. Four credit hours. First semester. Prerequisite, 101-102, or two entrance units.

104. Easy Classical Readings and Composition. Four credit hours. Second semester. Prerequisite, 103, or three entrance units.

106. Science Reading. Four credit hours. Second semester. Prerequisite, 103, or three entrance units.

Students offering four units in German should take Course 107-108. Modern and classical prose and verse. Four credit hours.

HORTICULTURE

(Horticultural Hall.)

PROFESSOR PADDOCK, ASSISTANT PROFESSORS DAVIS AND MONTGOMERY.

101. Principles of Horticulture. Four credit hours. First semester. Four-year course in Horticulture. Assistant Professor Davis.

The principles of plant growth, with special reference to horticultural crops, including the problem of tillage, drainage, frosts, weeds, insects, propagation, pruning, and spraying.

102. Principles of Horticulture. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of 101. Assistant Professor Davis.

103. Olericulture or Vegetable Gardening. Three credit hours. First semester. Four-year course in Horticulture. Assistant Professor Montgomery.

Including a study of locations, soils, manures, and fertilizers, marketing, etc., as related to the home and market garden. Each of the garden vegetables is considered specifically.

104. Olericulture or Vegetable Gardening. Three credit hours. Second semester. Four-year course in Horticulture. A continuation of 103. Assistant Professor Montgomery.

105. Pomology. Four credit hours. First semester. Four-year course in Horticulture. Professor Paddock.

Including the propagation, pruning, spraying, cultivating, harvesting, etc., with special reference to the fruit commonly grown in the temperate zone. Tropical and sub-tropical fruits of commercial importance in the North will also receive consideration.

106. Pomology. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of 105. Professor Paddock.

107. Plant Variation. Three credit hours. First semester. Four-year course in Horticulture. Professor Paddock.

A course designed for those interested in plant breeding and in the modification and improvement of plants by mutation, crossing, dwarfing, forcing, etc., together with a discussion of the current theories of evolution as applied to the variation and amelioration of plants under cultivation.

108. Landscape Gardening. Three credit hours. Second semester. Two and four-year courses in Horticulture. Assistant Professor Montgomery.

A study of the art of producing picture-like or landscape effects; the making of lawns, walks, drives, and the correct planting of trees, shrubs, and flowers for the external adornment of home and public grounds.

109. Experimental Horticulture. Three credit hours. First semester. Four-year course in Horticulture.

This course is designed to give the student training in research methods. Technical problems are assigned depending upon the needs and the inclination of the student. This work not only gives practice in the application of extract methods, but affords abundant opportunities to become familiar with the literature of horticulture.

110. Experimental Horticulture. Three credit hours. Second semester. Four-year course in Horticulture. A continuation of 109.

111. Principles of Horticulture. Four credit hours. First semester. Two-year courses in Horticulture and Agriculture. Assistant Professor Davis.

This course is essentially the same as 101 and 102 modified and adapted to the needs of the two-year students.

112. Principles of Horticulture. Four credit hours. Second semester. Two-year courses in Horticulture and Agriculture. A continuation of 111. Assistant Professor Davis.

113. Pomology. Four credit hours. First semester. Two-year course in Horticulture. Professor Paddock.

This course is essentially the same as 105 and 106 modified and adapted to the needs of the two-year students.

114. Pomology. Four credit hours. Second semester. Two-year course in Horticulture. A continuation of 113. Professor Paddock.

115. Olericulture or Vegetable Gardening. Four credit hours. First semester. Two-year course in Horticulture. Assistant Professor Montgomery.

This course is essentially the same as 103 and 104 modified and adapted to the needs of the two-year students.

116. Olericulture or Vegetable Gardening. Four credit hours. First semester. Two-year course in Horticulture. A continuation of 115. Assistant Professor Montgomery.

118. Pomology. Four credit hours. Second semester. Four-year course in Agriculture. Assistant Professor Davis.

This course deals with the fundamental problems of fruit growing, with special reference to the home or farm orchard and small fruits. The problems of soil location, propagation, pruning, spraying, cultivation, harvesting and marketing receive special consideration.

119. Floriculture. Three credit hours. Second semester. Four-year course in Horticulture.

A discussion of the history, propagation and culture of florists' plants, and the diseases and insects that prey upon them.

INDUSTRIAL ARTS

(Office, Room 2, Hayes Hall.)

PROFESSOR SANBORN, MR. CROWE, MR. BEEM.

The shops occupy the north wing of Hayes Hall and afford excellent facilities for instruction in both the practical details and the underlying principles of carpentry, pattern-making and forging. The carpenter and pattern shops are equipped with fifty benches with complete sets of carpenter tools for each, twenty-four turning lathes with the necessary turning tools, a pony planer, a buzz planer, a circular rip and cross-cut saw, a scroll saw, a band saw, a trimmer, and two power grindstones. The forge shop is equipped with twenty-five stationary forges with anvils and tools for each, a heating furnace, a gas turnace for hardening and tempering with pyrometer for high temperature measurements, a foot power hammer, a blacksmith drill, and a punch shear and bar cutter.

Shop Work

101 or 102. Carpentry and Pattern Making. Two credit hours. First or second semesters.

Practice in carpentry and pattern-making, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; and the making of simple patterns.

103 or 104. Forging. Two credit hours. First or second semesters.

The use and care of forge, fire, and tools; practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

MATHEMATICS

(Office, Room 314, University Hall.)

PROFESSORS BOHANNAN, M'COARD, SWARTZEL AND KUHN, ASSOCIATE PROFESSOR ARNOLD, ASSISTANT PROFESSOR PRESTON.

103. Elementary Algebra. Five credit hours. First semester. Text-book, Venable's.

104. Plane Geometry. Five credit hours. Second semester. Text-book, Venable's.

121. Trigonometry and College Algebra. Three credit hours. First semester.

Trigonometry is taken up at the beginning of the semester and College Algebra is studied in connection with Trigonometry as it may be needed throughout the semester.

122. Analytical Geometry and College Algebra. Three credit hours. Second semester.

Analytical Geometry is taken up at the beginning of the second semester and College Algebra is also studied in connection with this subject as may be needed. In this way College Algebra is continued through the year in connection with Trigonometry and Analytical Geometry.

METEOROLOGY

(Townshend Hall)

PROFESSOR J. WARREN SMITH.

101. Elementary Meteorology. Two credit hours. First semester. Textbook, Moore's Descriptive Meteorology.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

102. Climatology, Practical Meteorology, Phenology. Two credit hours. Second semester, Prerequisite course 101 or Geology 162.

Special attention will be given to the climate of the United States and of Ohio, the relation of climate to man, the practical benefits to be derived from the daily weather forecasts and warnings, and the effect of weather upon business, manufacturing, health, crime, deportment, and crop yield. About one half of the time is devoted to original investigation, by each student, of the relation between weather and crop yield.

MILITARY SCIENCE AND TACTICS

CAPTAIN GEORGE L. CONVERSE, U. S. A. (RETIRED),

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, unless excused by the Military and Gymnasium Board, to drill during two years. This work is under an officer of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

Equipment

The equipment of the Military Department comprises 1,000 standard U. S. Magazine rifles, with belts, bayonets and accoutrements, 51 regulation infantry officers' sabres and belts, 25 cadet swords and belts, a stand of regimental colors, with markers, guidons, etc. The target practice equipment comprises six Springfield gallery rifles and seven Winder-Model Winchester gallery rifles, five targets for 100, 200 and 300 yards, and five Winder-Model targets for long range. The band comprises about 60 pieces, partly supplied by the University and partly owned by the members.

The office is equipped for recording the attendance and performance of each cadet in drill, target practice, and classroom work.

Organization

Cadet regiment is organized into three battalions of four companies each, a band, and trumpet corps. Each battalion has its own staff officers. The total number of men under arms averages about one thousand at present. Service in the band is credited as military service. The appointment of cadet officers during the second year of service is for excellence in their work. These officers may continue to serve during the third and fourth years if they wish, and if they do, are given compensation at the end of each year's satisfactory service, amounting to not less than twenty (\$20.00) dollars for lieutenants and captains, and larger sums for officers of higher ranks. Members of the band who volunteer for service after

having completed their two years required duty, are also paid at the rate of \$20.00 per year, and receive instruction during the four winter months by a competent band-master.

1. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring) military drill; four months, three hours per week (winter), of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of winter months, at 100, 200, and 300 yards. Lecture one hour weekly by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring), in extended order and guard duty. Four months, three hours per week (winter) of class-room instruction in Articles of War, guard, manual and field service regulations. Target practice, at any open hour of the afternoons of the winter months, at 500, 600, and 800 yards.

PHYSICAL EDUCATION

DR. H. S. WINGERT, DIRECTOR.

The work in Physical Education for men and women is conducted under the direct supervision of the Professor of Physical Education, who is a graduate physician. For the men's work he has two assistants and twenty student aids, who are selected each year from those who show proficiency in their work. For the women's work there is an associate professor, who is a graduate physician. She has a student assistant and twenty aids, who are chosen because of their proficiency.

The main floor of the gymnasium (80x150 feet) is well equipped with modern gymnastic apparatus. It is used by the women in the forenoon, while the men exercise in the gymnasium on the first floor. In the afternoon the main floor is used exclusively by the men for class work, athletics, basketball, and other recreative games.

(A) FOR MEN (The Gymnasium.)

PROFESSOR WINGERT, MR. BAUER, MR. ALEXANDER.

1. Physical Education. One credit hour. Two hours per week. The year. Required of all first-year students in this college. This course consists of (a) Lectures on hygiene and

physiology of exercise first two weeks, first semester, (b) Corrected: A graded course of freehand exercise, stretching, relaxing, stimulating, exercise with light hand apparatus for the relief and correction of slight body defects, deformities, improper carriage, etc. (c) Educative: Graded progressive exercise on the apparatus and mats to promote muscular tone, vigor, vitality, endurance. (d) Recreative: Gymnasium games, mental relaxation, non-competitive exercises.

A thorough physical examination is made of each student at the opening of the college year. Physical defects, abnormalities, and weaknesses are noted, and judicious, healthful exercise is prescribed to fit the student's individual needs.

2. Advanced Exercises. Elective. (a) Advanced exercises on the apparatus and mats. (b) Combative exercises—boxing, fencing, wrestling. A small charge is made to those electing this work. (c) Recreative—football, baseball, basketball, tennis, track and field sport, cross-country running, etc. (d) Swimming—an excellent pool is provided for this exercise. Special hours are arranged for those electing the above exercises and credit given in regular course.

(B) FOR WOMEN

(The Gymnasium.)

DR. LITTLEJOHN, MISS SAUER.

1. Physical Education. One credit hour. Four hours per week during the first year of a student's residence. (a) Lectures on hygiene and purpose of different kinds of physical exercises, four hours per week, first two weeks of first semester, first week of second semester. (b) Practical work in gymnasium, as follows: (1) Corrective work; exercises for correction of faulty position of different parts of body, and of deformities; for development of chest, etc. (2) Educative work: exercises to develop co-ordination of groups of muscles, accuracy of movement, and to impart grace and beauty and a ready expression of thought in physical motions. (3) Recreative: classic dancing, and rhythmic movements, gymnastic games, and relaxing exercises. (4) Athletics (elective): carefully supervised basketball, running, swimming, etc., for those who desire it. A physical examination is made by the directors of every woman

entering this course before she can begin the gymnasium work, and, if necessary, special work will be prescribed to meet her physical needs.

2. Physical Education. One credit hour. The year. Four hours per week during the second year of a student's residence.

PHYSICS

(Office, Room 24, Physics Building.)

PROFESSOR COLE, MR. HEIL.

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practice. Other courses in Physics may be elected by four-year students in Agriculture.

ROMANCE LANGUAGES AND LITERATURES

(Office, Room 305, University Hall.)

PROFESSORS BOWEN AND BRUCE, ASSOCIATE PROFESSOR INGRAHAM, ASSISTANT PROFESSOR HAMILTON, MR. CHAPIN, MR. ROCKWOOD, MR. BOND.

I. French

101-102. Elementary French. Four credit hours. The year. Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies. Ten sections. All instructors.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition made to contribute to this end. Sight reading is emphasized.

103-104. Modern French Literature. Four credit hours. The year. Four sections. Prerequisite, course 101-102, or equivalent. Professor Bruce, Assistant Professor Hamilton, Mr. Rockwood.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry;

(4) Romantic drama (Hugo). Prose composition. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

II. Spanish

101-102. Elementary Spanish. Four credit hours. The year. Grammar: (Hills and Ford's), or equivalent, and Ingraham's *Victoria y Otros Cuentos*. Easy prose and plays. Composition and practice in speaking. Four sections. Associate Professor Ingraham, Assistant Professor Hamilton, Mr. Chapin.

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Course 101-102, or equivalent. Associate Professor Ingraham.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practice in speaking continued.

RURAL ECONOMICS

(Office, Room 100, Townshend Hall.)

PROFESSOR PRICE, MR. PHILLIPS.

The department includes instruction in farm management, farm accounts, history of agriculture, and agricultural economics.

The facilities offered for the study of farm management include the University farm, containing over three hundred acres, and the records that have been kept of its operations for many years. Adjoining Columbus, and within reach by electric cars, there are many well equipped and well managed farms, which are frequently visited by classes in this department.

For the study of the history of agriculture and agricultural literature, the University Library offers excellent facilities in the large number of agricultural works which it contains and the complete files of agricultural periodicals. In the study of agricultural economics, the State Library, as well as the University Library may be used, and excursions are made in the State to investigate agricultural conditions.

101. Farm Accounts and Records. Two credit hours. First semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

102. Farm Management. Four credit hours. Second semester. Two-year courses in Agriculture and Horticulture. Mr. Phillips.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a comparative study of the different systems of farm management; the cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands; and keeping farm accounts and records.

103. Farm Management. Four credit hours. First semester. Four-year course in Agriculture. Professor Price.

Lectures and recitations upon the problems of farm management, the relative profits of different systems of farm management, and their effect upon maintaining the fertility of the land. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Second semester. Professor Price.

Lectures and recitations upon the production, distribution, transportation, and marketing of agricultural products. The relation of the industry of agriculture to other industries, co-operation in agriculture, agricultural organizations, and the social conditions of agricultural communities are considered.

105. Historical and Comparative Agriculture. Three credit hours. First semester. Professor Price.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

107-108. Research Work for Graduate Students. Five to ten credit hours. Professor Price.

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and in agricultural economics.

SHOP WORK
(See Industrial Arts.)

SPANISH
(See Romance Languages.)

VETERINARY MEDICINE
(Office, Veterinary Laboratory.)

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT.

Students in Agriculture, taking required or elective work in Veterinary Medicine, may avail themselves of the whole equipment of the College of Veterinary Medicine. For the class-room work, a large number of papier-mache models, wet and dry anatomical specimens, sample horseshoes, charts, diagrams and drawings, surgical instruments, and apparatus are constantly employed to supplement text-book teaching. The Clinic Building affords excellent facilities for the care and treatment of diseased and injured animals.

The Veterinary Laboratory building is especially designed for the teaching of Veterinary Medicine. It contains the Anatomical Museum, probably the largest in the country, a modern sanitary dissecting room and laboratories for pathology, pharmacology, and bacteriology.

149. Veterinary Anatomy. Three credit hours. Second semester. Assistant Professor Lambert.

Brief outline of the anatomy of the horse and ox.

150. Veterinary Hygiene and Sanitation. Three credit hours. First semester. Professor White.

The more common sporadic and infectious diseases, minor surgery, castration, horse-shoeing and soundness are briefly considered in this course.

ZOOLOGY AND ENTOMOLOGY
(Office, Room 1, Biological Hall.)

PROFESSORS OSBORN AND LANDACRE, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSOR BARROWS, MR. METCALF.

Work in this department is largely on the laboratory plan, the effort being to have each student become familiar with typical forms of animal life, acquire the power to discover facts

for himself, and use them in practical applications. Animals that have an important economic relation are used as examples for their respective groups. While the aim is to give a thorough and sound training in the underlying principles of zoology and entomology, the practical bearing of these is shown by the use of such forms as the liver fluke of sheep to show effect and relations of parasitism; the earth-worm in its relation to soil formation; trichina as affecting human health and meat exports; insects, both useful and injurious; fishes as a source of food; relation of birds to insect control; and importance of certain groups of birds and mammals as the source of our domestic animals. Advanced and graduate courses provide for training in methods of research, and especial attention is given to preparation for investigation in experiment stations and the government bureaus.

101-102. Elementary Zoology. Three credit hours. First semester, invertebrates to the arthropods. Second semester, arthropods and vertebrates. Professors Osborn and Landacre, Assistant Professor Barrows.

This course includes a general discussion of groups, dissection of types, and an outline of classification. Especial attention is given to forms of economic importance either from their detrimental effects on crops, stock, etc., or from their utility in various industries or as domestic species.

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Course 101-102. Associate Professor Hine.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in Entomology. Preparation of collections, essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

109-110. Systematic and Practical Entomology. Three credit hours. The year. Elective in short course in Agriculture. Required in short course in Horticulture. First year. Associate Professor Hine.

111. Parasites of Domestic Animals. One credit hour. First semester. Elective. Professor Osborn.

A lecture course devoted to the principal parasites affecting domestic animals, intended especially to meet the needs of those who intend to give particular attention to stock raising.

112. Apiculture. Three credit hours. Second semester. Elective. Associate Professor Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in Junior or Senior years. Prerequisite, Zoology 101-102, 107-108. Professor Osborn.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Courses 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological investigators in experiment stations or as teachers in agricultural schools. They may be taken as graduate courses if not elected earlier, or continued as special lines of research during a graduate course embracing other special subjects.)

143-144. Zoological Seminar. One credit hour. The year. Professor Osborn, Professor Landacre, Associate Professor Hine.

Discussion of recent literature in zoology and entomology, reviews of progress in certain lines of investigation and presentation of research studies. Advanced students in Zoology and Entomology are expected to elect this course, and it is open to others who have had preliminary courses.

129. Quantitative Studies in Variation and Heredity. Two credit hours. First semester. Elective. Recommended for juniors taking agronomy, animal husbandry, or horticulture, and should be taken with Botany 121. Prerequisite, Zoology 101.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practice in measuring, assembling, and analyzing data, and the plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practice in handling and analysis of Mendelian data.

130. Continuation of 129. Including a study of the effects of selection, in-breeding, crossing, and environment, and a study of eugenics. Four credit hours. Second semester. Elective. Prerequisite, Zoology 129.

Half of the semester will be spent in a study of the reactions of animals to external stimuli and the relations of their reactions to the normal activities of the animals and to practical problems.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes.

Tuition—Tuition is free in this College, but registration is not complete until certain incidental and laboratory fees are paid.

Incidental Fee—The fee for students who are residents of Ohio is ten dollars a semester. For non-residents, the fee is fifteen dollars a semester. Children of non-resident Alumni pay the same fee as residents of Ohio.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Fees—A fee of two dollars a semester is charged for all laboratory courses using gas, water, electrical current or steam. For all other courses which are not purely lecture courses, a laboratory fee of one dollar is charged. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee—The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the cost of towels.

Cadet Uniform—The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about thirteen dollars.

It is quiet in pattern, and may be worn in place of civilian dress.

Students are advised not to buy second-hand uniforms.

The Ohio Union—A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union, consistent with the Constitution and House Rules governing it.

Graduation Fee—A fee of five dollars, to cover expense of graduation and diploma, is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board—Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from two dollars and seventy-five cents to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five to six dollars per week.

Board can be secured at the Ohio Union Commons, by young men, at reasonable rates.

Text-Books—Students should not purchase text-books until they are advised by the instructors of their respective classes.

In order to meet all the necessary expense of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend about fifty dollars during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

The total cost per year, exclusive of clothing and traveling expenses, is from \$275 to \$400, according to the degree of economy exercised by the student.

Women Students—As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of resi-

dence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed three dollars and a half a week. Prospective women students should address Miss Emma McKinley, Oxley Hall, Columbus, Ohio.

FREE SCHOLARSHIPS

A free scholarship good for two years in the College of Agriculture is granted to one student annually from each county in Ohio, but not more than two scholarships can be in force at one time from any county.

Each scholarship is valid for two years from its grant and covers incidental and fixed laboratory fees. In the chemical laboratories a student holding a free scholarship is required to pay for materials used and to make a deposit to cover breakage the same as other students. In case of other than new students, the scholarship will be accepted only after approval by the Board of Trustees, but in no case will the benefits of scholarships be granted to a student for more than two years. All scholarships must be presented to the Secretary of the Board of Trustees on or before November 1st of the year in which they are to be used, otherwise they are not valid.

The free scholarships cannot be used in the special winter term courses. The appointments are made by the County Boards of Agriculture, and are not transferable by the appointees. To learn whether the scholarship of a given county for the current year has been granted, inquiry should be addressed to the Secretary or President of the County Agricultural Society. For further information concerning these scholarships, inquiries should be addressed to the Dean of this College.

CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association has come to occupy a prominent place in university life. It has a membership of about five hundred men, and is affiliated with the World's Student Christian Federation.

Religious meetings are held for men on Sunday afternoon; there are also frequent meetings for the promotion of social intercourse and good fellowship. Courses in systematic Bible study and in modern missions are offered. A most helpful feature of the work is that in the interest of new students at the opening of the school year. Desirable rooms and boarding places are found and posted for reference at the Association Office. Representatives of the Association meet the trains, assist students in finding satisfactory locations, and endeavor in every way to make them feel at home. The Employment Bureau helps to find work.

A copy of the Students' Handbook, giving information about Columbus, the University, and the various college organizations and activities, will be sent free to prospective students. For this handbook or for further information, address the General Secretary of O. S. U. Y. M. C. A., University Campus, Columbus, Ohio.

The Young Women's Christian Association holds religious meetings regularly at noon on Tuesdays. This organization is active and efficient in working for the higher interests of the young women.

SELF-SUPPORT

There is a large amount of work on the University farm and campus and in the gardens, orchards, and greenhouses, which can be done by students, and for which they are paid at current rates for such labor. Each year several thousand dollars are paid out in this way. By this means, together with what can be earned by steady labor during the summer vacation, a considerable number of students defray all their expenses.

Preference is given to students who are willing to devote a certain number of hours each day to the work assigned.

Work cannot be promised to all applicants, and is not guaranteed to any.

Applications for employment should be made to the Superintendent of the University farm. Labor blanks will be furnished upon request.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given principally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

Home Makers' Course. Cooking, Baking, Canning, Home Decorations and Home Economics.

No farm or household practices are given, except such as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at important fairs and expositions are supplied, instruction for the agricultural trains is furnished, and special bulletins, designed to awaken interest in agricultural education, are published.

Nearly seventeen thousand men and women have attended the Agricultural Extension Schools; over forty-two thousand visited the agricultural trains in 1911; thirty thousand farmers, teachers, and children receive bulletins published by this department every month.

For a bulletin of information concerning these Agricultural Extension Schools, address the University Editor. For information not contained in this bulletin and for information regarding other forms of Extension work, address the Superintendent of Agricultural Extension, Ohio State University, Columbus.

The Ohio State University Bulletin is issued at least twenty times during the academic year; monthly in July, August, September and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XVII

DECEMBER, 1912

NUMBER 12

COLLEGE OF AGRICULTURE

1913-14



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at Columbus, Ohio, under Act of Congress, July 16, 1894

THE OHIO STATE UNIVERSITY

The Ohio State University, located in Columbus, is a part of the public educational facilities maintained by the State. It comprises seven colleges and a graduate school:

The College of Agriculture,
The College of Arts, Philosophy, and Science,
The College of Education,
The College of Engineering,
The College of Law,
The College of Pharmacy,
The College of Veterinary Medicine,
The Graduate School.

This bulletin of announcements is devoted exclusively to the work of the College of Agriculture, offered during the academic year, beginning September, 1913.

Note.—The University publishes a bulletin descriptive of each college. Copies may be obtained by addressing W. E. Mann, University Editor, Columbus, Ohio, and stating the college in which the writer is interested.

UNIVERSITY CALENDAR

1913

Entrance examinations, Tuesday to Saturday, June 3 to 7 (8 a. m.).

Summer Session, June 16 to August 8.

Entrance examinations, Tuesday to Saturday, September 9 to 13 (8 a. m.).

First Semester begins—Registration Day—Tuesday, September 16.

President's Annual Address, Friday, September 19 (11 a. m.).

Latest date of admission to candidacy for a degree at the Commencement of June, 1914, Wednesday, October 1.

Date for mid-semester reports to the Deans concerning delinquent students, Wednesday, November 19.

Thanksgiving recess begins November 26 (6 p. m.) and ends December 2 (8 a. m.).

Christmas recess begins Friday, December 19 (6 p. m.).

1914

Christmas recess ends Tuesday, January 6 (8 a. m.).

Winter Course in Agriculture and Dairying begins Monday, January 5.

Final examinations, Friday, January 30, to Thursday, February 5.

First semester ends Thursday, February 5 (6 p. m.).

Second semester begins—Registration Day—Tuesday, February 10.

Washington's Birthday, Sunday, February 22.

Date for mid-semester reports to the Deans concerning delinquent students, Saturday, March 28.

Easter recess, Saturday, April 4 (12 m.), to Tuesday, April 14 (8 a. m.).

Competitive Drill—Cadet Regiment—Saturday, May 23.

Memorial Day, Saturday, May 30.

Final examinations, Friday, June 5, to Thursday, June 11.

Entrance examinations (8 a. m.), Tuesday, June 9, to Saturday, June 13.

Commencement, Wednesday, June 17.

COLLEGE OF AGRICULTURE

The College of Agriculture offers ten distinct courses of study:

1. A four-year course in Agriculture.
2. A four-year course in Horticulture.
3. A four-year course in Forestry.
4. A four-year course in Home Economics.
5. A two-year course in Agriculture.
6. A two-year course in Horticulture.
7. An Apprentice's course in Animal Husbandry.
8. A winter course in Dairying.
9. An eight-week winter course in Agriculture.
10. An eight-week winter course in Poultry Husbandry.

The four-year courses of this College are regular collegiate courses of the University and lead to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Horticulture, Bachelor of Science in Forestry, and Bachelor of Science in Home Economics. The requirements for admission to these courses are given in the following pages.

The short courses are for students who are not so well prepared and are unable to spend four years in the University. It has been found, however, that a large proportion of those who enter the short courses find time and means to continue one of the four-year courses.

FACULTY AND INSTRUCTORS

WILLIAM OXLEY THOMPSON, D. D., LL. D., PRESIDENT of the University.

HOMER CHARLES PRICE, M. S. A., DEAN, PROFESSOR of Rural Economics and Manager of University Farm.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), SECRETARY, Assistant Professor of Agronomy.

DEPARTMENTS REPRESENTING THE TECHNICAL
WORK OF THE COLLEGE*Agricultural Chemistry.*

ALFRED VIVIAN, Ph. G., Professor.

JOHN F. LYMAN, Ph. D., Associate Professor.

FIRMAN E. BEAR, M. Sc. (Agr.), Assistant Professor.

*MYRON A. BACHTELL, B. Sc. (Agr.), Instructor.

*W. J. HENDRICKS, B. Sc. (Agr.), Assistant.

*PORTER ELLIOTT, B. Sc. (Agr.), Assistant.

E. B. HAWES, Assistant.

EARL JONES, (B. Sc.), Fellow.

THOMAS G. PHILLIPS, B. Sc. (Agr.), Instructor.

CLINTON B. CLEVINGER, B. Sc. (Agr.), Fellow.

Agronomy.

ARTHUR GILLETT MCCALL, B. Sc. (Agr.), Professor.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), Assistant
Professor.

†GEORGE LIVINGSTON, B. Sc. (Agr.), Assistant Profes-
sor.

*CLIFFORD J. GRANT, B. C. (Agr.), Assistant.

*W. E. MCCOY, B. Sc. (Agr.), Assistant.

MALCOLM SEWELL, B. Sc. (Agr.), Assistant.

MALON YODER, B. Sc. (Agr.), Assistant.

Animal Husbandry.

CHARLES SUMNER PLUMB, B. Sc., Professor.

FREEMAN S. JACOBY, B. Sc. (Agr.), Assistant Profes-
sor of Poultry Husbandry.

D. J. KAYS, B. Sc. (Agr.), Instructor.

GILBERT GUSLER, B. Sc. (Agr.), Assistant.

*WILLIAM H. PALMER, B. Sc. (Agr.), Assistant.

WILLIAM HISLOP, B. Sc. (Agr.), Assistant.

DAVID MAXWELL FYFFE, Superintendent.

†Absent on leave, 1913-14.

Agricultural Extension.

ALBERT B. GRAHAM, Superintendent.

RUTH JAMES, Assistant.

HARRY E. ESWINE, Assistant.

†THOMAS H. WHEELER, Extension Editor.

Dairying.

OSCAR ERF, B. Sc. (Agr.), Professor.

OMER COLE CUNNINGHAM, B. Sc. (Agr.), Assistant Professor.

WILLIAM L. CLEVINGER, B. Sc., Instructor.

ROBERT B. STOLTZ, B. Sc. (Agr.), Assistant.

Home Economics.

RUTH A. WARDALL, M. A., Professor.

EDNA NOBLE WHITE, B. A., Associate Professor.

ANNA FRANCES BLOHM, B. A., Instructor.

ALICE CRANE, B. Sc., Assistant.

MAUDE C. HATHAWAY, B. Sc., Instructor.

*ELIZABETH JEFFERSON, B. Sc. (Dom. Sc.), Assistant.

*MABEL MISKIMEN, B. S. (Dom. Sc.), Assistant.

*JOSEPHINE MATTHEWS, B. Sc., Assistant.

*MARIE SPAHR, B. A., Assistant.

*MRS. C. W. FOULK, B. Sc. (Dom. Sc.), Assistant.

*MRS. L. W. FUNK, B. Sc. (Dom. Sc.), Assistant.

*MRS. GEO. W. LIVINGSTON, B. Sc. (Dom. Sc.), Assistant.

Forestry.

WILLIAM R. LAZENBY, M. Agr., Professor.

CHRISTIAN H. GOETZ, B. Sc., Instructor.

OTTO W. PFLUEGER, B. Sc. (Agr.), Assistant.

Horticulture.

WENDELL PADDOCK, M. Sc., Professor.

VERNON HAYES DAVIS, M. S. A., Assistant Professor.

†Resigned.

LEWIS M. MONTGOMERY, M. Sc. (Agr.), Assistant Professor.

ROBERT B. CRUICKSHANK, B. Sc. (Agr.), Assistant Professor.

RALPH R. JEFFRIES, B. Sc., Assistant.

Rural Economics.

HOMER CHARLES PRICE, M. S. A., Professor.

J. WARREN SMITH, Professor of Meteorology.

THOMAS D. PHILLIPS, B. Sc. (Agr.), Assistant.

Those marked with (*) in Horticulture, Agricultural Chemistry, Animal Husbandry, Agronomy, Home Economics, and Dairying, are employed in the Extension Department.

DEPARTMENTS OF GENERAL SCIENCE FUNDAMENTAL TO THE WORK OF THE
COLLEGE OF AGRICULTURE

Anatomy and Physiology.

ALBERT MARTIN BLEILE, M. D., Professor.

RAYMOND JESSE SEYMOUR, M. S., M. D., Associate Professor.

EDWIN POE DURRANT, M. A., Assistant Professor.

Bacteriology.

CHARLES BRADFIELD MORREY, B. A., M. D., Professor.

WILLIAM A. STARIN, M. A., Assistant Professor.

Botany.

JOHN H. SCHIAFFNER, M. S., Professor.

ALFRED PAUL DACHNOWSKI, Ph. D., Assistant Professor.

ROBERT FISKE GRIGGS, B. Sc., M. A., Assistant Professor.

Chemistry.

WILLIAM MCPHERSON, Ph. D., Professor.
WILLIAM LLOYD EVANS, Ph. D., Professor.
JAMES RENWICK WITHROW, Ph. D., Professor.
CHARLES WILLIAM FOULK, B. A., Professor.

Geology.

CHARLES SMITH PROSSER, Ph. D., Professor.
JOHN ADAMS BOWNOCKER, D. Sc., Professor.
THOMAS MCDUGALL HILLS, Ph. D., Assistant Professor.

Veterinary Medicine.

DAVID STUART WHITE, D. V. S., Professor.
SEPTIMUS SISSON, S. B., Professor.
FONSA ALLEN LAMBERT, D. V. M., Assistant Professor.

Zoology.

HERBERT OSBORN, M. Sc., Professor.
FRANCIS LEROY LANDACRE, B. A., Professor.
JAMES STEWART HINE, B. Sc., Associate Professor.
WILLIAM BARROWS, B. Sc., Assistant Professor.

Mathematics.

ROSSER DANIEL BOHANNAN, B. Sc., C. E., E. M., Professor.
KARL DALE SWARTZEL, M. Sc., Professor.
CHARLES LINCOLN ARNOLD, M. Sc., Associate Professor.

Physics.

ALFRED D. COLE, M. A., Professor.
ROBERT F. EARHART, Ph. D., Professor.
HERMAN GUSTAVUS HEHL, Ph. B., Instructor.

DEPARTMENTS REPRESENTING OTHER RE- QUIRED WORK OF THE COLLEGE

American History.

GEORGE WELLS KNIGHT, Ph. D., Professor.

HOMER C. HOCKETT, B. L., Associate Professor.

Art.

MARY REBECCA LAVER, Professor.

MARGARET FINNEY, Assistant.

ALICE ROBINSON, Assistant.

Civil Engineering.

CHRISTOPHER ELIAS SHERMAN, C. E., Professor.

ROBERT N. WAID, C. E., Assistant.

HOMER G. MCCALL, C. E., Assistant.

Economics and Sociology.

JAMES E. HAGERTY, Ph. D., Professor.

MATTHEW BROWN HAMMOND, Ph. D., Professor.

FAYETTE AVERY MCKENZIE, Ph. D., Professor.

CHARLES CLIFFORD HUNTINGTON, M. A. Assistant Pro-
fessor.

English.

JOSEPH VILLIERS DENNEY, M. A., Professor.

GEORGE H. MCKNIGHT, Ph. D., Professor.

WILLIAM LUCIUS GRAVES, M. A., Professor.

HARRY FRANKLIN HARRINGTON, M. A., Assistant Pro-
fessor.

Engineering Drawing.

THOMAS EWING FRENCH, M. E., Professor.

ROBERT MEIKLEJOHN, M. E., Assistant Professor.

CREE SHEETS, C. E. (Arch.), Instructor.

A. C. HARPER, C. E., (Arch.), Instructor.

German.

M. BLAKEMORE EVANS, Ph. D., Professor.
BERTHOLD AUGUST EISENLOHR, M. A., Professor.
LUDWIG LEWISOHN, M. A., Assistant Professor.
MAY THOMAS, Ph. D., Assistant Professor.

Industrial Arts.

FRANK EDWIN SANBORN, S. B., Professor.
CLEMENT C. BEEM, Instructor.
CHARLES PHILIP CROWE, Instructor.

Romance Languages.

BENJAMIN LESTER BOWEN, Ph. D., Professor.
CHARLES A. BRUCE, B. A., Professor.
EDGAR SHUGERT INGRAHAM, Ph. D., Associate Professor.

Architecture.

JOSEPH NELSON BRADFORD, M. E., Professor.
CHARLES ST. JOHN CHUBB, C. E., Associate Professor.

Library.

OLIVE JONES, B. A., Librarian.

Military Science.

CAPTAIN GEORGE L. CONVERSE, U. S. A. (Ret.), Professor.

Physical Education.

H. SHINDLE WINGERT, M. D., Professor.
ALICE LITTLEJOHN, M. D., Associate Professor.

ADMISSION

Applicants for admission must be at least sixteen years of age. The College is open on equal terms to both sexes.

UNIVERSITY ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Entrance Board, Ohio State University, Columbus.

ADMISSION TO THE COURSE LEADING TO A DEGREE

There are two modes of admission to the course leading to a degree: (a) by examination, (b) by certificate.

ADMISSION BY EXAMINATION

The Entrance Board will conduct entrance examinations June 3 to 7, and September 9 to 13, 1913. A part of the examinations may be taken in June and the remainder in September. All applicants for admission who cannot conform to the requirements for admission by certificate must take examinations for admission.

Schedule—Examinations will be from 8 to 12 a. m. and from 1 to 5 p. m. Students intending to take any of the examinations scheduled in any given half day must appear within one hour after the examination has begun. Students applying for examination will first go to the office of the Entrance Board, Room 100, University Hall, for registration.

Tuesday,	A. M.	History: Ancient and Medieval (to 814 A. D.), Medieval and Modern (after 814 A. D.), English.
Tuesday,	P. M.	English Composition and Rhetoric, English Classics, Chemistry.
Wednesday,	A. M.	Algebra, Physical Geography, Greek.
Wednesday,	P. M.	Plane Geometry, German, Spanish.
Thursday,	A. M.	Civil Government, Solid Geometry, Zoology.
Thursday,	P. M.	Beginning Latin and Cæsar, Elements of Agriculture, Trigonometry, Commercial Geography.
Friday,	A. M.	Physics, Physiology, Botany.
Friday,	P. M.	American History, French, English Literature.
Saturday,	A. M.	Vergil, Cicero, Domestic Science.

ADMISSION BY CERTIFICATE

Applicants may be admitted to the four year course in Agriculture and to the four-year courses in Horticulture and Forestry without examination on presentation of properly endorsed certificates from any first or second grade high school in this state, or from approved normal schools or from the State Board of School Examiners or from any school outside of the state which is recognized by the University, under the following provisions:

(a) If from secondary schools, the certificate must show that the applicant is a graduate in good standing of the school issuing it; and also must state in detail the studies pursued, the text-books used, the amount of work done in each study, the amount of time devoted to it, and the fact that the applicant has passed in the work.

(b) Any entrance requirement not covered by a certificate must be met by examination.

Blank certificates may be obtained by addressing the Secretary of the Entrance Board. Certificates should be filled out and returned to the University by the proper school official as early as possible after the close of schools in June.

Applicants to be admitted to the course in Home Economics without examination must present properly endorsed certificates from such secondary schools as have been accredited or recognized by the University or from approved normal schools or from the State Board of School Examiners, subject to the provisions above stated.

REQUIREMENTS BY UNITS

A unit is the equivalent of a course of study covering a school year, during which not less than one hundred and twenty clock-hours are spent in class-room work on the study. To obtain full standing applicants under twenty-one years of age must have credit by examination or certificate for fifteen units, of which two shall be English; two, foreign language (in Home Economics three units of English and four, foreign language); two, Mathematics; one, History; and one, Physics. The fifteen units must be selected from the following list:

English.....1, 2, 3, or 4 units
(Foreign students may substitute their native language
for the English requirement.)

A special bulletin of entrance information will be mailed on request. Address the University Editor.

American History or American History and Civil Government 1 unit

Ancient History (Greek and Roman) and Medieval History to 814 A. D. 1 unit

Medieval and Modern History (from 814 A. D. to the present) 1 unit

(For the present General History may be counted as a unit, but not in addition to Ancient or Medieval and Modern History.)

English History 1 unit

Algebra (through quadratics) 1 unit

Algebra (beyond quadratics) $\frac{1}{2}$ unit

Geometry (plane) 1 unit

Geometry (solid) $\frac{1}{2}$ unit

Trigonometry $\frac{1}{2}$ unit

Latin 2, 3, or 4 units

Greek 2 or 3 units

German 2, 3, or 4 units

French 2, 3, or 4 units

Spanish 2, 3, or 4 units

(Not less than two units of any language will be accepted.)

Physics 1 unit

Chemistry 1 unit

Physical Geography 1 unit

Zoology 1 unit

Botany 1 unit

Physical Geography	}	For the present any two of these may be counted together as	1 unit
Zoology			
Botany			
Physiology			

Agriculture	}	The Entrance Board may, after investigating each claim, grant a total credit of not to exceed	2 units
Manual Training			
Free-hand Drawing			
Domestic Science			
Commercial Geography			

*Farm Experience 2 units

A study listed as a half unit will be counted merely as such even if the course has extended for more than a half year. A

*Credit for Farm Experience will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

study listed as one-half or one unit will be given either rating, depending upon the length of the course. On a study listed as one unit, no credit will be given for less than a year's work.

No student under twenty-one years of age will be admitted to college if he is conditioned in more than two units. All entrance conditions must be removed within two years after admission.

Students over twenty-one years of age, after obtaining credit for elementary or "grade" work, and for such other subjects as may be necessary to qualify them for the classes that they wish to enter may, on the presentation of satisfactory reasons, be admitted by the joint action of the Entrance Board and the Executive Committee of the College, to any class in the College, provided that if any student who has been admitted on these conditions afterwards becomes a candidate for a degree, he shall take the omitted entrance examinations at least one academic year before the degree is conferred.

REMOVAL OF ENTRANCE CONDITIONS

Entrance conditions may be removed (1) by examination conducted only by the Entrance Board; or (2) by the substitution by the Entrance Board of excess work in other approved subjects; or (3) by the substitution of other work of equivalent amount to be done in the University; and it shall be the duty of the secretaries in their respective colleges to assign to each student having entrance conditions outstanding at the end of the Freshman year such college courses for the following years as may be deemed a fair equivalent for the work in which the student has entrance conditions. But a student who is taking or has completed a collegiate course is not eligible for entrance examinations upon the same topic, unless it is a fixed requirement in the college in which he is registered. (Faculty Rule 97.)

ADMISSION WITH ADVANCED STANDING

Applicants who have completed at least one year's work in an approved college, and who bring official and explicit certificates describing their courses of study and scholarship, and letters of honorable dismissal, will be admitted in accordance with either of two plans:

(1) The entrance units on which the candidate was admitted to the approved college will be accepted at their face value; deficiencies will be made up from the college credits presented, and advanced credit will be given for any remaining satisfactory work; or

(2) One year's work will be accepted in lieu of entrance units and the candidates will be admitted without examination and without conditions, but without any advanced standing on the year's work.

Applicants who have completed less than one year's work in an approved college will be given credit for satisfactory work provided they can meet regular entrance requirements.

REQUIREMENTS FOR SHORT COURSES

No examinations will be required for the two-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the Principal or Superintendent of the school last attended, recommending him to the University.

COURSES OF STUDY

AGRICULTURE

The course in Agriculture is one of a number of regular four-year collegiate courses in the University. It is designed not only to make specially trained agriculturists, but also educated men. The course pre-supposes that a young man has had a high-school training, or its equivalent, and that he has had the training in farm matters that usually comes to a young man who has lived on a farm. It supplements this training, but does not repeat it. The technical training in this course consists of those matters which years of experience in teaching have shown are either lacking or most necessary. Young men from the cities are entering this course, as they should do if they expect to engage in agricultural pursuits, but it should be understood that the course in Agriculture does not, except incidentally, supply that training in farm matters which comes from actual life upon the farm.

The officers of the College recognize the danger of a too special or technical training of under-graduate students in a subject having such a wide scope, and one requiring for its successful prosecution such breadth of knowledge as agriculture. A careful examination of the course as outlined will show that about one-third of the time of the student during the four years is, or may be, devoted to language (English and foreign), history, and economics, about one-third to pure science, and one-third to technical or professional training. Electives in the junior and senior years allow the student, if he chooses, to specialize in animal husbandry, agronomy, dairying, rural economics, agricultural chemistry, bacteriology, botany or entomology.

COURSE IN AGRICULTURE

Degree—Bachelor of Science in Agriculture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure, the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Inorganic.		Qualitative.	
Zoology (101)	3.	Zoology (102)	3.
Invertebrate.		Vertebrate.	
English (101)	2.	English (104)	2.
Paragraph Writing.		Brief Making.	
Animal Husbandry (101)	4.	Animal Husbandry (102)	4.
Cattle and Sheep.		Horses and Swine.	
Drawing (125)	2.	Geology (152)	3.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.

First Semester.		Second Semester.	
Geology (153)	3.	Agronomy (104)	4.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Botany (101)	4.	Botany (102)	4.
Physiology (101)	3.	Physiology (102)	3.
Zoology (107)	3.	Zoology (108)	3.
Entomology.		Entomology.	
Bibliography (103)	1½.		
Cadet Service	1.	Cadet Service	1.

THIRD YEAR.

First Semester.		Second Semester.	
Agronomy (106)	4.	Agronomy (101)	4.
Dairying (101)	4.	Horticulture (118)	4.
Modern Language	4.	Modern Language	4.
French, German, or Spanish.		French, German, or Spanish.	
Meteorology (101)	2.		
And one of the following:			
Animal Husbandry (103)	4.	Animal Husbandry (104)	4.
Veterinary Medicine (151)	3.	Veterinary Medicine (152)	3.
Forestry (*)	4.	Dairying (102)	4.
Zoology (113)	4.	Zoology (114)	4.
Entomology.		Entomology.	
Bacteriology (107)	4.	Bacteriology (110 or 112)	4.
Agricultural Chem. (*)	4.	Agricultural Chem. (*)	4.
Botany (*)	3 or 4.	Botany (*)	3 or 4.
Agronomy (107)	4.	Agronomy (102)	3.
Animal Husbandry (105)	3.	Animal Husbandry (106)	4.
		Meteorology (102)	2.

FOURTH YEAR.

First Semester.		Second Semester.	
American History (101) or		American History (102) or	
Economics (135)	3.	Economics (136)	3.
Rural Economics (103)	4.	Rural Economics (104)	3.
Farm Management.		Agricultural Economics.	

Elective

Ten hours a week throughout the year from any of the courses given in any of the colleges of the University upon which the student is qualified to enter, except the College of Law. Two hours a week of this elective work may be devoted to a thesis, subject to the consent of the instructor under whom the thesis is to be written.

HORTICULTURE

This course was established to meet a growing demand for special education and training in the College of Agriculture. It seeks to familiarize the student with those sciences that are fundamental in horticulture and to give a certain amount of technical and literary training.

Among the sciences that form the natural basis of a sound, practical knowledge of horticulture are chemistry, physics, bot-

*Students electing Agricultural Chemistry, Botany, or Forestry in their junior year should consult the department interested regarding the same before being registered.

any, geology, zoology, and entomology. To these a large part of the first two years of the course is devoted. In addition, one modern language, rhetoric or English composition, drawing and shopwork are required.

The last two years of the course are devoted mainly to horticulture proper, with some more strictly cultural studies like history or economics. A third part of the required work of the fourth year is elective, and may be chosen from any course in the University upon which the student is qualified to enter.

The primary object of the course is to teach those who desire to become fruit-growers, gardeners, nurserymen, florists, or landscape gardeners, what they most need to know as a foundation for their professional work. To this end both the science and art, or the theory and practice, are taught. While the sciences are invaluable in giving accurate and definite knowledge regarding the origin and growth of plants, and the composition and physical properties of the soil, they cannot tell us just how to select varieties, or how to propagate, transplant, cultivate, fertilize, prune, spray, or what is equally essential in practise, how to harvest, store and market the product to the best advantage.

For earnest, enterprising young men and women, horticulture, in its various branches, offers as large a reward for intelligent, well directed effort as any other pursuit or profession.

COURSE IN HORTICULTURE

Degree—Bachelor of Science in Horticulture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Inorganic.		Qualitative.	
Zoology (101)	3.	Zoology (102)	3.
Invertebrate.		Vertebrate.	
English (101)	2.	English (104)	2.
Paragraph Writing.		Brief Making.	
Horticulture (101)	4.	Horticulture (102)	4.
Principles.		Principles.	
Drawing (125)	2.	Geology (152)	3.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.

First Semester.		Second Semester.	
Horticulture (103)	3.	Horticulture (104)	3.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Geology (153)	3.	Agronomy (104)	4.
Zoology (107)	3.	Zoology (108)	3.
Economic.		Economic.	
Botany (101)	4.	Botany (102)	4.
Bibliography (103)	½.		
Cadet Service	1.	Cadet Service	1.

THIRD YEAR.

First Semester.		Second Semester.	
Horticulture (105)	4.	Horticulture (106)	4.
Modern Language	4.	Modern Language	4.
French, German, or Spanish.		French, German, or Spanish.	
Physiology (101)	3.	Physiology (102)	3.
Botany (125)	4.	Botany (126)	4.
Meteorology (101)	2.	Horticulture (108)	3.

FOURTH YEAR.

First Semester.		Second Semester.	
American History (101) or		American History (102) U. S.	
Economics (135)	3.	Political or	
Horticulture (109)	3.	Economics (136)	3.
Horticulture (107)	3.	Horticulture (110)	3.
		Botany (116)	3.

Elective

Seven hours a week through the year, chosen from any of the courses given in any college of the University upon which the student is qualified to enter, except the College of Law, two hours a week of which may be devoted to thesis, subject to the approval of the department in which the thesis is to be written.

FORESTRY

The main objects in the establishment of a four-year course in Forestry are: (1) To educate and train young men in forestry; (2) To promote forestry in the State of Ohio.

The facilities for becoming well grounded in the fundamental and accessory studies are provided in the various departments of the University. Language, mathematics, physics, chemistry, engineering, botany, geology, entomology, soil physics, American history, etc., form a large part of the work of the first two years of the course, while the last two years are devoted to the more technical subjects.

It is the aim of the department to reach two classes of students: First, those who purpose to make forestry their life work. Second, those who, while specializing in other courses, desire to acquaint themselves with the elements or with certain phases of the general subject.

The regular course seeks to prepare the student not only for practical work in the woods, but for national and state service in various lines; for consultation work for lumbermen, railroad companies, water-works, park commissions and private owners.

To those who enjoy outdoor life, and are willing to undergo vigorous tests of mental and physical strength, forestry presents an especially inviting field. The remuneration compares favorably with that of other salaried professions, and the opportunities for private enterprise are wide and varied.

The art of forestry has made such progress in our country, that it is sometimes advisable to specialize in certain well defined branches of the subject.

Opportunity for special work, in addition to what is included in the regular course, is offered in silviculture, forest management, and arboriculture.

Facilities for original and research work in scientific forestry are found in the various scientific and engineering laboratories of the University.

COURSE IN FORESTRY**Degree—Bachelor of Science in Forestry**

Note.—The figure in parenthesis following the name of each subject, indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding numbers under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Mathematics (121)	3.	Physics ()	3.
Modern Language (101)	4.	Modern Language (102)	4.
French, German, or Spanish.		French, German, or Spanish.	
English (101)	2.	English (104)	2.
Engineering Drawing (123)	2.	Forestry (102)	2.
Forestry (101)	2.	Silvics.	
Elementary.		Botany (110)	2.
		Dendrology.	
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.

First Semester.		Second Semester.	
Botany (101)	4.	Botany (102)	4.
Zoology (109)	3.	Zoology (110)	3.
Entomology.		Entomology.	
Modern Language (103)	4.	Modern Language (104)	4.
French, German, or Spanish.		French, German, or Spanish.	
Civil Engineering (121)	6.	Geology (152)	3.
Surveying.			
Forestry (103)	2.	Forestry (104)	3.
History and Relations.		Arboriculture.	
Cadet Service	1.	Cadet Service	1.

THIRD YEAR.

First Semester.		Second Semester.	
Forestry (105)	3.	Forestry (106)	3.
Silviculture.		Silviculture.	
Botany (125)	4.	Botany (126)	4.
Physiological Ecology.		Physiological Ecology.	
Agronomy (123)	2.	Botany (142)	2.
Forest Soils.		Dendrology.	
Forestry (111)	2.	Forestry (112)	2.
Protection.		Forest Craft.	
Chemistry (127)	3.	American History (126)	3.
Organic.			

Not less than four hours throughout the year from the following:

*American History (101)	3.	*American History (102)	3.
Agricultural Chem. (103)	5.	Agricultural Chem. (104)	5.
Zoology (113)	4.	Zoology (114)	4.
Engineering Drawing (137)	2.	Engineering Drawing (138)	2.
Economics (135)	3.	Economics (136)	3.
Horticulture (107)	3.	Horticulture (108)	3.
Meteorology (107)	2.	Botany (113)	3.

FOURTH YEAR.

First Semester.

Forestry (107)	4.
Mensuration.	
Forestry (109)	4.
Management.	
Botany (117)	4.
Forest Botany.	
Forestry (113)	2.
Economics.	
Forestry (117)	1.
Seminar.	

Second Semester.

Forestry (108)	4.
Utilization, Lumbering.	
Forestry (116)	4.
Wood Technology, Products.	
Botany (118)	4.
Forest Botany.	
Forestry (114)	2.
Forest Policy.	
Forestry (118)	1.
Seminar.	

Not less than three hours throughout the year from any of the courses given in any college of the University, upon which the student is qualified to enter.

Unless the candidate for a degree has had a full equivalent, not less than one summer of practical work in the woods is required before graduation.

*American history is required of all students who did not have a satisfactory high school course in that subject.

TWO-YEAR COURSE IN AGRICULTURE

The Short Course in Agriculture is a two-year course, designed to give practical instruction in the various branches of agriculture, and is intended primarily for those students whose previous training does not qualify them to enter the four-year course. While believing that the four-year course is none too long for the students who expect to engage in agricultural pursuits, it is recognized that there are many students whose circumstances make it impossible to take a four-year collegiate course in agriculture, and yet who would be greatly benefited by taking a less extended training for their life work.

This course is especially desirable for students of rather mature age. It contains as thorough instruction as the time will admit in agronomy, animal husbandry, dairying, horticulture (including fruit culture and vegetable gardening), forestry, veterinary medicine, economic entomology, bacteriology, and the sciences underlying these subjects. The second year contains optional work, so that it is possible for students to specialize in horticulture, agronomy, animal husbandry, or dairying.

No degree is given on the completion of the work, but a certificate is issued stating fully the work done.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Animal Husbandry (129)	4.	Animal Husbandry (130)	4.
Horticulture (111)	4.	Horticulture (112)	4.
Shopwork (101)	2.	Shopwork (104)	2.
Agronomy (103)	3.	Agronomy (108)	4.
Chemistry (101)	4.	Chemistry (102) or	
Elementary.		Agricultural Chem. (102)	4.
		Soil Fertility.	
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.**First Semester.**

Agronomy (105)	4.
Dairying (109)	4.
Elementary.	
Cadet Service	1.

Second Semester.

Rural Economics (102)	4.
Dairying (102)	4.
Farm Dairying.	
Cadet Service	1.

And two subjects each semester chosen from the following:

Veterinary Medicine (151)	3.	Animal Husbandry (128)	4.
Animal Husbandry (123)	4.	Feeding and Breeding.	
Dairy Cattle.		Horticulture (114)	4.
Horticulture (113)	4.	Pomology.	
Pomology.		Zoology (110)	4.
Zoology (109)	4.	Entomology.	
Entomology.		Bacteriology (104)	3.
Physiology (103)	3.	Mathematics (104)	5.
Mathematics (103)	5.	Botany (112)	4.
Algebra.		Elementary.	
Physics (101)	6.	Geology (162)	4.
Forestry ()	3.	Physical Geography.	

TWO-YEAR COURSE IN HORTICULTURE

This course is intended to be to those engaged in horticultural pursuits what the two-year course in agriculture is to those interested in farming. Practical instruction will be given in the subjects which are of interest to the fruit-growers, gardeners, nurserymen, florists, and landscape gardeners. The course is primarily for the student who, for various reasons, cannot take the four-year course in horticulture and yet desires to have a somewhat thorough preparation in the fundamentals of horticulture.

No degree is given on completion of the work, but a certificate is issued stating fully the work done.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department; the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Horticulture (111)	4.	Horticulture (112)	4.
Zoology (109)	4.	Zoology (110)	4.
Entomology.		Entomology.	
Shopwork (101)	2.	Shopwork (104)	2.
Chemistry (101)	4.	Chemistry (102) or	
Elementary.		Agricultural Chem. (102)	4.
Agronomy (103)	4.	Soil Fertility.	
		Botany (112)	4.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.

First Semester.		Second Semester.	
Horticulture (113)	4.	Horticulture (114)	4.
Pomology.		Pomology.	
Horticulture (115)	4.	Horticulture (116)	4.
Agronomy (105)	4.	Rural Economics (102)	4.
Cadet Service	1.	Cadet Service	1.
One of the following:			
Forestry	4.	Horticulture	4.
Mathematics (103)	5.	Mathematics (104)	5.
Algebra.		Bacteriology (104)	3.
Physics (101)	5.	Geology (162)	4.
Physiology (103)	3.	Physical Geography.	

APPRENTICE'S TWO-YEAR COURSE IN ANIMAL HUSBANDRY

This is essentially the same as the regular two-year course in Agriculture, but is especially arranged for students who wish to specialize in Animal Husbandry work. The course includes two years at the University and two years on stock farms. Through arrangement with the Department, specially qualified men may take this course. They will spend the first year at the University; the second will be devoted to practical training on stock farms by arrangement of the Department, pay being given for the service; the third year will be at the University, and the fourth year on other stock farms. Some of the leading stockmen of Ohio and other States have agreed to co-operate in arranging this course.

Not over 50 matriculants will be permitted to enroll, and each person must receive the written authority of the Animal Husbandry Department before being registered. No changes or substitutions will be permitted, and each person taking the work must agree to take the practical farm work as given in the course.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department; the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Types and Market Classes (101)	4.	Types and Market Classes (102)	4.
Cattle and Sheep.		Horses and Swine.	
Animal Husbandry (125)	3.	Animal Husbandry (128)	3.
Feeding Animals.		Breeding Animals.	
Agronomy (103)	4.	Agronomy (108)	4.
Chemistry (101)	4.	Agricultural Chem. (102)	4.
Shopwork (101)	2.	Shopwork (104)	2.
Cadet Service	1.	Cadet Service	1.
Gymnasium	1.	Gymnasium	1.

SECOND YEAR.

At least 300 days' service on an accredited stock farm, the student to be placed thereon by arrangement with the Department of Animal Husbandry.

THIRD YEAR.**First Semester.****Second Semester.**

Animal Husbandry (129)	4.	Animal Husbandry (130)	4.
Poultry Husbandry	2.	Meats and Meat Products	
Zoology (109)	4.	(110)	1.
Veterinary Medicine (151)	3.	Veterinary Medicine (152)	3.
Physiology (103)	3.	Bacteriology (104)	3.
		Botany (112)	4.
Rural Economics (101)	2.	Agricultural Economics	3.

FOURTH YEAR.

At least 300 days' service as during the second year, though on a different farm or farms from that year will be required. At end of fourth year, with a satisfactory record, the student will be granted an Apprentice's Certificate in Animal Husbandry.

WINTER COURSES

The Ohio Dairy School

This course in Dairying, beginning the first Monday in January, is established to meet the wants of those who have neither the time nor means for more extended courses. It is designed especially for those who are desirous of mastering the art of butter and cheese making or who wish to become fitted for the position of manager or superintendent of a creamery or cheese factory. In this course the greater part of the time is given to laboratory or dairy room practise. This consists in the testing of milk as to purity and content of butter fat; the use and care of centrifugal separators and other dairy devices; the making of butter and cheese by the most improved methods; in short, all the essential operations of the creamery, factory, and home dairy management are repeatedly performed under the guidance and direction of competent instructors. A special bulletin describing this course will be mailed, upon application, to any one interested.

Winter Course in Agriculture

The eight-week Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practises.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

An eight-week course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

Those who are interested are invited to write for the special announcement describing these courses.

HOME ECONOMICS

The course in Home Economics is planned to meet the special needs of women students. Four years of regular university work are required. The department of Home Economics stands for a liberal training of a university grade, which gives a homeward trend to the education of young women.

The course is essentially scientific in character, but a fair amount of literary, artistic, and economic training is provided. Certain courses offered in this department are elective for students who specialize along other lines of work. The prescribed course affords opportunity for a student to specialize in home economics, and elective courses in addition to this provide training for those who wish to teach the subject. Students desiring to enter this course will be required to present fifteen units entrance credits.

OUTLINE OF THE COURSE

Degree—Bachelor of Science in Home Economics

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR.

First Semester.		Second Semester.	
Chemistry (105 or 109)	4.	Chemistry (106 or 110)	4.
Art (101)	2.	Art (102)	2.
English (101)	2.	English (104)	2.
Zoology (101) or		Zoology (102) or	
Botany (101)	3 or 4.	Botany (102)	3 or 4.
Modern Language (101)	4.	Modern Language (102)	4.
French or German.		French or German.	
Home Economics (111)	2.	Home Economics (112)	2.
Hand Craft.		Textiles.	
Physical Training	1.	Physical Training	1.

SECOND YEAR.

First Semester.		Second Semester.	
Chemistry (127)	5.	Agricultural Chem. (123)	5.
Organic.		Home Economics (102)	4.
Home Economics (101)	4.	Physiology (102)	3.
Physiology (101)	3.	Modern Language (104)	4.
Modern Language (103)	4.	French or German.	
French or German.			
Engineering Draw. (127)	1½.	Engineering Draw. (128)	1½.
Bibliography (103)	½.		
Physical Training	1.	Physical Training	1.

THIRD YEAR.

First Semester.		Second Semester.	
Economics (135)	3.	Economics (136)	3.
Bacteriology (107)	4.	Home Economics (104)	3.
Agricultural Chem.		Home Economics (110)	4.
(124)	4 or 5.	Home Economics (114)	3.
Art (105)	2.		

Electives to make fifteen hours.

FOURTH YEAR.

First Semester.		Second Semester.	
Sociology (101)	3.	Sociology (102)	3.
Home Economics (105)	2.	Home Economics (106)	3 to 5.
Home Economics (107)	3.		

Electives to make fifteen hours.

Electives for the course must include not less than three hours of English through the year, and, for students not offering entrance credit in American History, three hours of American History through the year.

Note—Students in the College of Agriculture may elect the courses in Biblical Literature and Historical Christianity, taught by Miss Breyfogle. (See bulletin of the College of Education.)

GRADUATE WORK IN COLLEGE OF AGRICULTURE

Graduate work in the College of Agriculture is particularly planned for those persons who expect to enter College or Experiment Station work, or the Government Bureaus relating to Agriculture.

It is recognized that the scientific advance in agriculture requires men who are conversant with practical agriculture and the related sciences, and who are also prepared to do research work and to put into good pedagogic form the results of recent investigation.

Equipment

The University has especially good facilities for advanced work. Intensified agriculture and horticulture throughout the State, and especially in the territory surrounding Columbus, give students unusual opportunity to observe the practical application of science in farming.

The laboratories, a farm of over four hundred acres, the various breeds of farm animals kept on the farm, as well as the numerous excellent herds and flocks available in the vicinity, give ample facilities for studying problems in these lines in technical agriculture.

The various orchards and small fruit plantations belonging to the University and accessible within the State show a wide range of methods and the development of a specialized culture.

The instructors in the scientific departments of the University are heartily in sympathy with agricultural work, and take great interest in scientific problems of immediate value to agriculture that students take up in the laboratories of these departments. The laboratories in the department of science most intimately connected with work in agriculture and horticulture are provided with extensive collections and apparatus giving excellent opportunity for the investigation of special problems.

Graduate School

All graduate work in the University is now given in the Graduate School of the University. The various departments listed in this bulletin offer graduate work in a number of lines. For full particulars regarding the graduate courses, requirements for degrees, etc., see the bulletin of the Graduate School.

Departments Offering Graduate Work

The lines in which the various departments are best prepared to offer graduate work are as follows:

Agricultural Chemistry

Major graduate work may be taken along the lines of food inspection and analysis, human nutrition, animal nutrition, dairy chemistry or soil chemistry.

Agronomy

The graduate courses offered by the Department of Agronomy cover three fields of investigation:

- (1) Crops.
- (2) Soils.
- (3) Agricultural Engineering.

Two special graduate courses in crops are provided, one of which is designed to cover investigations in general crop production and the other to cover plant breeding investigations and other subjects directly related to crop improvement.

The graduate course in soils will include the preparation of monographs on the following topics:

- (1) Soil surveying and mapping.
- (2) The relation of soil types to crop production.
- (3) The influence of certain physical properties upon productive capacity.

Animal Husbandry

Special facilities are available for students who wish to take major work in Animal Husbandry. Each of the members of the department has a special line of research in which students may work or they may be directed in the investigation of any topics selected.

The topics named below can be taken up with particular advantages at this Institution:

- (a) Phases of the breeding or the management of dairy cattle.
- (b) Wools and other animal fibres.
- (c) Inheritance in farm animals.
- (d) The breeds of horses.
- (e) Live stock registration.
- (f) Breed history and development.
- (g) Live stock judging.

Work along any one of the above lines can be arranged for minor credit as well as for major.

Bacteriology

The courses offered in the Department of Bacteriology of special importance to graduate students in the College of Agriculture are as follows:

- (a) Advanced soil bacteriology, including studies on the bacterial diseases of soils.
- (b) Advanced dairy bacteriology, including studies on the handling of the various dairy products and their preparation.
- (c) Water bacteriology, dealing with the methods of examination and studies on the various methods of filtration.
- (d) Bacteriological chemistry; principally enzyme work.
- (e) Pathogenic bacteriology, with special reference to the disease bacteria in the soil.

Botany

Courses are offered by the Department along several lines of especial importance to agricultural students. These courses cover four fields of investigation as follows: (1) Plant cytology, including problems of heredity and special studies on chromosomes; (2) plant physiology, emphasis being placed upon the relation of the plant to the soil, together with a study of soil diseases; (3) mycology, including fungous diseases of cultivated plants; (4) systematic botany, with studies on various groups, as grasses, trees, etc.

Dairying

Students desiring graduate work in the Department of Dairying can arrange for work along any of the following lines:

- (a) Formulating rations for the economical production of milk and butter fat.
- (b) The production of sanitary milk in an economical manner.
- (c) The manufacture of butter, especially with reference to increased keeping quality.
- (d) The manufacture of a variety of cheeses.
- (e) Milk condensation.
- (f) The manufacture of fermented milk.
- (g) The manufacture of ice cream.

Geology

The Department of Geology offers work open to graduate students of the College of Agriculture along four distinct lines, viz.:

(1) Stratigraphic geology with trips for the field study of Ohio formations supplemented by laboratory study of specimens and literature (Course 105).

(2) Paleontology, which includes identification and description of the fossils of the Ohio and related formations (Course 107-108).

(3) Economic geology describing the metallic ores and the non-metals of the United States (Course 167).

(4) Glacial geology in which the glacial deposits of North America are described with field trips for the study of those found in Ohio (Course 106). Courses 105 and 106 constitute a year's work and are of particular importance in understanding the origin of the soils of Ohio.

Rural Economics

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and in agricultural economics.

Zoology and Entomology

The graduate work provided in this department covers especially the courses in Entomology, and in this subject it is possible for students to prepare themselves thoroughly for professional work either in teaching, experiment station work, or for government positions. Many of the graduates of the College are now occupying such positions in many different states, and in the government service. The courses available are Advanced Entomology Nos. 113 and 114, in case this has not been taken as an undergraduate course, and if it has been taken, it may be followed by special research courses Nos. 141 and 142, consisting of research work on entomological problems. The graduate course is Invertebrate Zoology, 247-248, is also available for more thorough preparation upon invertebrates in general.

For graduate students in Animal Husbandry, this department offers a course in quantitative studies in Variation, Heredity, and Animal Behavior, Nos. 129 and 130. In all these courses the equipment is sufficient to enable the student to do work of an individual and distinctly advanced character.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY

(Townshend Hall.)

PROFESSOR VIVIAN, ASSOCIATE PROFESSOR LYMAN, ASSISTANT PROFESSOR BEAR, MR. PHILLIPS, AND ASSISTANTS.

The Department of Agricultural Chemistry occupies the second floor of Townshend Hall. Each desk contains a complete outfit of apparatus and chemicals necessary for the work in hand. Special apparatus and chemicals are supplied from the store room. Each desk is equipped with gas and water. Hoods for evaporation and generation of noxious gases and liquids are conveniently arranged on both sides and one end of the laboratory.

For Undergraduates

102. Application of Chemistry to Agriculture. Four credit hours. Second semester. Short courses in Agriculture and Horticulture. Mr. Vivian.

Lectures and recitations embrace the following topics: Ingredients of plants, organic and inorganic, essential and non-essential; sources of plant food, air and soil; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, and preservation; commercial fertilizers, their rational use; methods of determining the needs of soils.

103-104. General Agricultural Chemistry. Five credit hours. The year. Four-year courses in Agriculture, Horticulture, and Forestry. Prerequisite, Chemistry 106 or 110. Mr. Vivian, Mr. Bear, and assistants.

Three lectures and two laboratory periods weekly. Lectures on chemistry as applied to agriculture, including the following topics: Food requirements of plants, sources of plant

food, soil exhaustion and amelioration, barnyard manure and commercial fertilizers, composition of feeding stuffs and dairy products. Laboratory work consists of a brief introduction to quantitative analysis, gravimetric and volumetric, followed by the analysis of fertilizers, feeding stuffs, and dairy products.

105-106. Advanced Agricultural Analysis. Five credit hours. The year. Prerequisite, 103-104. Mr. Vivian and Mr. Bear.

The work of this course consists of a detailed study of the official methods of determining nitrogen, potash, phosphoric acid; the complete analysis of grains and feeding stuffs, milk, butter, and cheese. Intended for students desiring to specialize in agricultural chemistry.

123-124. Home Economics Chemistry. Four or five credit hours. The year. Course in Home Economics. Prerequisite, Chemistry 106 or 110. Mr. Lyman and Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

For Advanced Undergraduates and Graduates

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, 103-104. Mr. Vivian.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter, and cheese; determination of the chemical and physical contents of butter fat; determination of the different proteids of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

109-110. Chemistry of Soils. Three to five credit hours. The year. For students specializing in agronomy. Prerequisite, Course 103-104. Mr. Vivian, Mr. Bear.

Lectures and laboratory work on the chemical composition of the soil, using the official method of analysis of soils, and the

various methods suggested by the U. S. Department of Agriculture; testing needs of soil for application of commercial fertilizers.

111-112. Chemistry of Animal Nutrition. Three to five credit hours. The year. Prerequisites, 103-104 or equivalent. Mr. Vivian.

For students specializing in animal husbandry.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, 103-104 or an equivalent preparation in quantitative analysis. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder; vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Advanced Household Chemistry. Three to five credit hours. The year. Prerequisite, 123-124. Mr. Lyman.

A study of the composition and analysis of foods; the chemistry of cookery and changes during cooking, as shown by analysis; the examination of cleaning materials, baking powders, the sanitary analysis of water, etc.

For Graduate Students Only

131-132. Research Work. Five to ten credit hours. The year. Mr. Vivian, Mr. Lyman.

(Courses 105 to 112, 121-122, and 125 to 126 may be taken as graduate work if not previously elected, or continued as special lines of research during a graduate course.)

AGRONOMY

(Townshend Hall.)

PROFESSOR M'CALL, ASSISTANT PROFESSORS RAMSOWER AND LIVINGSTON,
MR. GRANT, MR. SEWELL, MR. YODER.

The soils laboratory is provided with apparatus for study of the physical properties of soils, including specific gravity, the re-

tention of moisture, the effect of mulches on evaporation, the rate of percolation of water through soils and the capillary rise of moisture. The laboratory is also provided with a complete centrifugal outfit for the mechanical analysis of soils, and electrical instruments for determining temperature and soluble salt content.

The department also has several drainage levels, six architect's levels, two surveyor's transits for use in laying out drainage systems, surveying fields, etc.

In the study of crops use is made of a large collection of seeds, of dried specimens of grasses, grains, and other crops, and the growing crops on the farm. For the corn judging work, samples are secured of all the chief varieties grown in different sections of the corn belt, and opportunity is offered in the advanced courses to assist in judging at local corn shows. The market grades of grain and hay are studied by means of commercial samples secured from the chief markets. The department is supplied with Brown-Duval testers and ovens for the study of the moisture content of field crops in different stages of curing and under different processes of storage.

The variety test plots include all the principal Ohio varieties of corn, wheat, oats, barley, flax, sorghum, millet, soy beans, and cow peas, and the different species of grasses and legumes used for pastures and meadows, all grown side by side, so that a comparative study may be made as to the value of each. Breeding plots of corn, wheat, alfalfa, clover, and timothy are maintained to give opportunity for the study of variation, correlation, selection, and other principles of plant breeding as well as the practical methods of crop improvement.

For Undergraduates

101. Farm Equipment. Four credit hours. Second semester. Prerequisite, Engineering Drawing 125. Mr. Ramsower.

Lectures and recitations on the laying out and equipment of the farm, the planning of the farm buildings, and a detailed study of farm power, water supply, and farm machinery. Prac-

ticum in the laying out of farms, the planning of farm buildings, comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

102. Agricultural Engineering. Three credit hours. Second semester. Mr. Ramsower.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size, depth and distance apart of tile; (c) roads; history of road building, kinds of roads, their construction and cost. Field work in differential leveling, laying out drainage systems, constructing road profile, and obtaining areas by chain and transit.

103. Farm Equipment. Four credit hours. First semester. Two-year courses in Agriculture and Horticulture. Mr. Ramsower.

Lectures and practise covering the laying out and the equipment of the farm, the planning of buildings, and a general study of farm power, machinery, water supply, roads and drainage.

104. Elementary Soils. Four credit hours. Second semester. Prerequisite, Geology, 165 or 153. Four-year courses in Agriculture and Horticulture. Mr. McCall and Mr. Sewell.

Lecture and recitations on the origin, formation, and kinds of soil, their chemical and physical composition, and improvement by cultivation, fertilization, drainage, and irrigation. Laboratory studies of the physical properties of soils, and the factors which control soil fertility.

105. Elementary Soils. Four credit hours. First semester. Two-year courses in Agriculture and Horticulture. Mr. McCall and Mr. Sewell.

Lectures and recitations on the formation and physical properties of our agricultural soils, with special reference to methods of management and improvement. Practicum in the laboratory for the study of the relation of soils to air, heat, moisture, and fertilizers.

106. Field Crop Production. Four credit hours. First semester. Prerequisite, Botany 101 or its equivalent. Mr. Livingston and Mr. Yoder.

A study of the history, adaptation, distribution, and classification of the cereal crops, and the cultivation, harvesting, and marketing of the same throughout the great agricultural sections of the world, with special attention given to Ohio conditions.

108. Crop Production. Four credit hours. Second semester. Two-year course in Agriculture. Mr. Livingston and Mr. Yoder.

A study of the cultivation, harvesting, and utilization of the principal cereal and forage crops of the United States, with special reference to Ohio conditions.

109. Seed and Market Grain. Two credit hours. First semester. Prerequisite, Agronomy 106. Mr. Livingston.

Seed selection; corn and small grain judging, and the market grading of grains.

111. Grasses and Forage Crops. Three credit hours. Second semester. Prerequisite, Botany 101 or its equivalent. Mr. Livingston.

The study of the history, distribution, adaptation, characteristics, cultivation, harvesting, and marketing of the principal forage crops, including the grasses and legumes used for pastures and meadows, annual forage crops, soiling, and silo crops. Laboratory work in the study of methods of preparing the seed bed, root systems of forage plants, root nodules and inoculation of legumes, moisture content of forage crops, comparison of silage methods, comparative study of annual forage crops, and seed testing for purity and germination.

***114. Advanced Farm Machinery.** Two credit hours. Second semester. Prerequisite, Agronomy 101. Mr. Ramsower.

*Not given 1913-14.

A detailed study of the construction of farm machinery. Expert work in assembling and testing grain binders, corn harvesters, mowers, etc. Efficiency tests of gasoline and steam engines.

121. Farm Architecture. Two credit hours. First semester. Prerequisite, Drawing 125. Mr. Ramsower.

Lectures covering the properties of materials used in the construction of farm buildings: timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

123. Forest Soils. Two credit hours. First semester. Forestry Course. Prerequisite, Geology 165 or equivalent. Mr. McCall.

A brief study of the topography, drainage, soils and climatic feature of the United States. The work is arranged with special reference to the needs of the students in the Forestry Course.

For Advanced Undergraduates and Graduates.

107. Advanced Soils. Four credit hours. First semester. Prerequisite, Agronomy 104 or 105. Mr. McCall.

Lectures on (a) general character and the distribution of the more important soil types of the United States and their adaptability to crops, (b) the factors underlying soil fertility, with special reference to the effect of different methods of cultivation and cropping. The lectures will be supplemented by field trips for the identification and mapping of soil types and by laboratory work, which will include the mechanical analysis of soils and a study of their physical behavior.

110. Agricultural Experimentation. Three credit hours. Second semester. Mr. McCall.

Lectures upon history and development of experiment stations, methods and character of station work, and the interpre-

tation of experimental results. Seminars devoted to critical study of experiment station literature, and to the methods of experimentation.

113. Field Crop Improvement. Three credit hours. First semester. Prerequisite, Agronomy 106. Mr. McCall.

A study of the principles involved and the methods used in the improvement of field crops.

For Graduates Only

Special work in soils and crops is offered for students desiring to take a graduate course in agronomy. Students taking this work will be given an opportunity to prepare for work in the United States Department of Agriculture and for college and experiment station positions.

115-116. Advanced Crop Production. Five to ten credit hours. The year.

Research and monograph work in one or more of the cereal or forage crops.

117-118. Advanced Crop Improvement. Five to ten credit hours. The year.

Research work in plant breeding, the study of plant breeding experiments at the University and at the State Experiment Station, and the investigation of crop improvement work in other states and countries.

119-120. Research Work in Soils. Five to ten credit hours. The year.

The preparation of monographs and special laboratory or field work on topics connected with the subject of soils, including (a) methods of surveying and mapping, (b) the relation of soil types to crop production, and (c) the influence of certain physical properties upon crop production.

AMERICAN HISTORY

(Office, Room 207, University Hall.)

PROFESSOR KNIGHT, ASSOCIATE PROFESSOR HOCKETT, MR. SCHLESINGER.

101-102. Political History of the United States. Three credit hours. The year. Mr. Knight, Mr. Hockett, Mr. Schlesinger.

An outline course covering the period 1750-1910, considering political, economic, and personal aspects of American history from the origins to the present day. The volumes of the Epochs series, by Hart, and Wilson, and MacDonald's Documentary Source Book of American History, will be used as textbooks, supplemented by outside reading. Recitations and reports.

126. Development and Administration of National Resources. Three credit hours. Second semester. Prerequisite, American History 101-102, unless the student has received entrance credit of one unit in United States History. Mr. Hockett.

An historical approach to such present-day problems as conservation, irrigation, afforestation, and disposition of the public lands. The course will deal with the origin and extension of the public domain; the westward spread of population; the development of means of transportation; Indian relations, and similar questions, in their inter-relations and their effects upon government policy. This course is open only to students of the College of Agriculture.

ANATOMY AND PHYSIOLOGY

(Biological Hall, Rooms 12 to 21.)

PROFESSOR BLEILE, ASSOCIATE PROFESSOR SEYMOUR, ASSISTANT
PROFESSOR DURRANT, DR. ALLEN.

The facilities provided for the study of anatomy, histology, and physiology are good. The laboratory is supplied with skeletons, manikin, and many models of the organs of the body. The apparatus for work in physiology is of good construction and adequate for the performance of fundamental physiological experiments.

For work in histology, the equipment includes sixty individual tables for student work, each one being supplied with a good microscope and the various accessories. The equipment of the laboratories makes it possible to offer work along certain lines to advanced students.

101-102. Human Anatomy and Physiology. Three credit hours. The year. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Allen.

103. General Physiology. Three credit hours. First semester. Short course in Agriculture. Mr. Durrant.

104. Chemical Physiology. Three credit hours. Second semester. Mr. Bleile.

ANIMAL HUSBANDRY (Live Stock Pavilion.)

PROFESSOR PLUMB, ASSISTANT PROFESSOR JACOBY, INSTRUCTOR KAYS
AND ASSISTANTS HISLOP AND GUSLER.

The University herd contains a large number of valuable, high-class animals. These include excellent specimens for class room work of pure bred Shorthorn, Aberdeen Angus, Jersey, Guernsey, Holstein-Friesian, Kerry, and Red Polled cattle, and a variety of pure bred and grade beef steers. Good specimens of Merino, Southdown, Shropshire, Horned Dorset, Cheviot, and Cotswold sheep, and Berkshire, Poland-China, Duroc-Jersey, and Large Yorkshire swine are also kept. For years the Department has shown specimens of the University stock at the International Live Stock Exposition, where numerous important prizes have been won. These show animals are used extensively in the judging work of the students. The University owns some choice pure bred Percheron, Clydesdale, and Hackney mares, and good specimens of work horses. In addition to this, at convenient distances from Columbus are famous studs of imported Percheron, French Coach, German Coach, and Belgian horses. Students are conducted to Columbus stables containing large numbers of horses, and to stock farms about Columbus and in neighboring counties, where methods of feeding and handling may be studied

and animals inspected. Each year a class of students attends the International Live Stock Exposition at Chicago in charge of instructors, spending a few days among the stock exhibits, the Union stock yards, and packing houses. Class room facilities in animal husbandry are of a high order. The judging pavilion for live stock is a beautiful brick structure, having a room 112 feet long, with tan-bark floor, on which stock may be shown to the best advantage. This building, with the new cattle and horse barns, all constructed in 1907 at a cost of \$80,000, gives the University the finest facilities for teaching Animal Husbandry. As additional facilities for instruction, the University has a superior collection of herd, flock, and stud books of the various American and European breeding associations. These are used in laboratory work in the Principles of Breeding and the study of breeds. There is also a large collection of lantern slides of breeds and types of animals, various instruments for measuring and studying stock, specimens of feeding stuffs, wools, and other animal products.

Four-Year Course

101. Types and Classes of Cattle and Sheep. Four credit hours. First semester. Mr. Gusler.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Mr. Gusler.

A discussion of the various types, classes and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Mr. Kays.

Lectures, text-books, and recitations upon the history, development, characteristics, and adaptation of types and breeds

of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Mr. Kays.

Covers the subject of cattle and swine on the same basis as Course 103.

105. Feeding Animals. Three credit hours. First semester. Mr. Vivian, Mr. Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations and in studying rations in practical use in the community and suggesting improvements, if desirable. The economy of the subject is carefully considered. Mr. Vivian has charge of the class the first part of the semester on the subject of the chemistry of foods and nutrition, Mr. Plumb taking the balance of the semester in a discussion of practical feeding problems.

106. Principles of Breeding. Four credit hours. Second semester. Mr. Kays.

Lectures, text-books, and recitations upon the subjects of heredity from various points of view in its application to breeding farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction, and working out problems in heredity from herd books. Students taking this course should have had either Course 103 or 104, and preferably both. Also the course in Zoology in the Freshman year.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Mr. Plumb, Mr. Kays, Mr. Hislop.

This is an advanced class for students who have already had the work of the Junior year in Courses 103 and 104. The purpose is to give a more detailed consideration to type and breed conformation, with an emphasis on practise in judging

groups and classes and rendering required reasons therefor. Only students who have generally covered certain necessary judging work are expected to take this course.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period. This course should be preceded by 105 and 106. Mr. Kays.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool, and pork.

109. Horse Training, Harness and Vehicle. Two credit hours. First semester. Mr. Kays.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. One credit hour. Second semester. Mr. Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. Second semester. Mr. Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practices of the live stock markets and yards, the market classification and grading, the export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market development. Visits are also made to stock yards, transportation agencies, packing houses, etc.

114. Biographical Studies of Master Breeders. One credit hour. Second semester. Time to be arranged. Mr. Plumb.

A series of lectures discussing the lives and methods of famous master breeders of live stock.

116. Dairy Cattle. Four credit hours. Second semester. Mr. Plumb.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year. Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management. Mr. Jacoby.

Laboratory work will consist of practise in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus, will be taken.

120. Poultry Feeding. One credit hour. Second semester. Practise work in feeding and caring for a flock of fowls for one month, to be assigned. Mr. Jacoby.

Each student will be required to visit the poultry plant morning, noon and afternoon to do the necessary work and keep the records of a pen of fowls.

122. Incubator Practise. One credit hour. Second semester. Practise work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Time to be arranged. Mr. Plumb.

Lectures and seminary work on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practise in shearing is required.

132. Types and Breeds of Live Stock. Three credit hours. Third year. Second semester. Elective. Mr. Kays.

For veterinary college students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle as coming within the field of the veterinary practitioner.

Two-Year Course

123. Dairy Cattle. Four credit hours. First semester. Laboratory to be arranged. Mr. Plumb.

Text-book and discussion of the history, characteristics, economic value, etc., of breeds of dairy cattle. Practical work in judging one afternoon a week, various methods being used. Herds of cattle in the vicinity will be visited.

128. Feeding and Breeding of Animals. Three credit hours. Second semester. Mr. Kays.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions occupies the first half of the semester. The second half is given to the principles of breeding; text-book, lectures, and recitations being required. Pedigree study and problems in heredity occupy the laboratory period.

129-130. Types and Breeds of Live Stock. Four credit hours. The year. Mr. Hislop.

Text-book and discussion on the history, characteristics, adaptability, economic value, etc., of types and breeds of live stock. Practical work in judging one afternoon a week, both score card and comparative group work being used.

Apprentice's Course in Animal Husbandry.

125. The Feeding and Care of Animals. Three credit hours. First semester. Mr. Hislop.

A general consideration of the subject of animal nutrition and practical feeding, including the care of animals in association with feeding.

133. The Breeding of Animals. Three credit hours. Second semester. Mr. Kays.

The breeding of farm animals is considered in some detail. A text-book will be used in this subject.

Graduate Work

Graduate Work in Animal Husbandry will be provided in this department to suit the needs of the student, under the general rules of the University for this work.

Courses are offered as lines of special study under departmental direction. Special investigational facilities are at hand, in the use of the University stables, the laboratory in agricultural chemistry, the extensive library of works on animal husbandry, the large stables in and about Columbus, etc. No animal husbandry department in America has at its disposal a more comprehensive supply of material for the student of the horse.

ARCHITECTURE

(Office, Brown Hall.)

PROFESSOR BRADFORD, ASSOCIATE PROFESSOR CHUBB, MR. HASKETT.

101-102. History of Architecture. Three credit hours. The year. Lectures illustrated by lantern slides. Mr. Bradford.

ART

(Office, Hayes Hall.)

PROFESSOR LAVER, MISS FINNEY, MISS ROBINSON.

101-102. Design and Composition. Two credit hours. The year. Mrs. Laver, Miss Robinson, Miss Finney.

This course is designed to develop appreciation of harmony of line, space, and color. It brings into play the creative imagination and establishes a basis for critical judgment along all art lines. Medium: Pencil, ink, and water color.

105-106. Design and Composition. Two credit hours. The year. Prerequisite, Course 102. Miss Finney, Mrs. Laver.

Continuation of Art 102 with advanced problems in color and line as applied to decoration.

BACTERIOLOGY

(Office, Veterinary Laboratory Building.)

PROFESSORS MORREY AND M'CAMPBELL, ASSISTANT PROFESSOR STARIN,
MR. JANSEN, MR. GATEWOOD.

These courses in Bacteriology, except 104, are open to advanced undergraduate and graduate students only. The instructor in charge must be consulted before electing.

104. Agricultural Bacteriology. Three credit hours. Second semester. For two-year courses in Agriculture and Horticulture. Mr. Starin.

107. General Bacteriology. Three to five credit hours. First semester. Mr. Morrey, Mr. McCampbell, Mr. Starin, Mr. Jansen, Mr. Gatewood.

108. Pathogenic Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey, Mr. McCampbell, Mr. Starin, Mr. Jansen, Mr. Gatewood.

110. Dairy Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey.

112. Soil Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Courses 107 and 110, or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Courses 107 and 112, or equivalents. Mr. Morrey.

BIBLIOGRAPHY.

(Library Building.)

MISS JONES AND MR. REEDER.

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

A required course for students in the College of Agriculture. This course consists of lectures and problems on the use of refer-

ence books, indexes, catalogues, and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

(Office, Botanical Hall.)

PROFESSOR SCHAFFNER, ASSISTANT PROFESSORS GRIGGS AND DACHNOWSKI, DR. DETMERS, MR. STOVER.

The department offers good facilities for instruction and investigation. The museum contains a large amount of material, illustrative of the various groups of plants, the collection of Ohio woods being complete. There is a good general herbarium and a State herbarium consisting of about thirty thousand sheets of Ohio plants. The laboratories are well equipped with dissecting and compound microscopes, also the usual appliances for doing both elementary and advanced morphological and physiological work. The greenhouse attached to the Botanical Building is an important adjunct to the department, furnishing much fresh material for study. It is also used as a laboratory for certain phases of the work in plant physiology.

101-102. General Botany. Four credit hours. The year. Text-books, Curtis's *Nature and Development of Plants* (2d edition), Schaffner's *Laboratory Outlines for General Botany* (3d edition). Mr. Schaffner, Mr. Griggs, Miss Detmers, Mr. Stover.

This course gives a general survey of the plant kingdom by the comparative method of morphological types and life cycles. It is intended to present a general view of the morphology, evolution and classification of plants from the lowest to the highest.

107. Plant Histology. Two credit hours. First semester. Prerequisite, Botany, 101-102, or equivalent. Miss Detmers.

110. General Dendrology. Two credit hours. Second semester. Text-book, Schaffner's *Trees of Ohio and Surrounding Territory*. Mr. Schaffner.

A study of trees and shrubs, with practise in the identification of woody plants, both in summer and winter condition. Students are required to prepare a dendrological herbarium.

112. Elementary Botany. Four credit hours. Second semester. Text-books, Bergen and Caldwell's Practical Botany, and Kellerman's Spring-Flora (New edition). Miss Detmers.

This is a general elementary course, consisting mostly of organography, plant physiology and a study of the native flora, but some instruction is also given in ecology and classification and the economic phases of the subject. The students are required to do work in the field both in observation and collecting.

This course cannot be used for university credit.

113. Morphology of the Higher Fungi. Three credit hours. First semester. One lecture and two laboratory periods. Prerequisite, Botany 101-102. Mr. Stover.

A study of the fungous flora, both fleshy and woody forms, with special reference to edible and poisonous mushrooms and to the wood-destroying species.

116. Plant Pathology. Three credit hours. Second semester. Prerequisite, Botany 101-102, or equivalent. Text-book, Duggar's Fungous Diseases of Plants. Mr. Stover.

The diseases of plants due to physical causes and animals are briefly considered, but the main part of the course is devoted to a study of the parasitic fungi most destructive to cultivated plants. Each student takes some economic subject or group of parasites for special study and is required to prepare a complete report on the same.

117-118. Forest Ecology. Four credit hours. The year. Prerequisite, Botany 101-102 or equivalent. Mr. Dachnowski.

In this course the emphasis is laid on the ecological study of forests although general ecology is also considered. It includes work on the native and introduced trees with a floristic study of some special group. This is supplemented by a study of the development of woods, characters of coniferous, hard, and soft woods and changes due to attacks of fungi. The students are required to prepare a series of gross and microscopic sections. A study is also made of the genetic development of local forests.

121. Plant Genetics. Two credit hours. First semester. One lecture, one laboratory period. Prerequisite, Botany 101-102 and one additional year of some biological subject. Students electing this course should also take Zoology 129. Mr. Schaffner.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, fluctuations and mutations, together with methods of procedure in crossing both lower and higher plants. Emphasis is placed on heredity in wheat and corn.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Dachnowski.

The course is an experimental study of the soil, air, and biotic relations of plants. It aims to give training and instruction in such phases of nutrition, growth, movement, and the tropisms of plants as have a practical bearing on agriculture, forestry, and general biology.

142. Dendrology of Conifers. Two credit hours. Second semester. Prerequisite, Botany 101-102. Mr. Schaffner.

CHEMISTRY

(Office, Chemistry Hall.)

PROFESSORS M'PERSON AND EVANS, DR. BOORD, MR. HOCKETT, MR. DAY, MR. CALDWELL, MR. HOLLER, AND DEPARTMENT FELLOWS.

The laboratories of the department accommodate over twelve hundred students. Each laboratory is equipped with all necessary conveniences—water, gas, electric lights, distilled water piped from a large still in the attic, steam ovens, automatic air blasts, suction pumps, etc. The department is liberally supplied with the best apparatus and materials for both lecture-room and laboratory work. Each student has his own desk with drawers and locker. All supplies are procured from the chemical store room, which has always on hand a complete stock of all necessary materials.

101. Elementary Chemistry. Four credit hours. First semester. One lecture, one quiz, six hours' laboratory work weekly. Mr. Evans, Mr. Hockett.

A general introductory course on the chemistry of the non-metals. It is distinctly elementary in character and is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses. Students taking this course should follow with Course 102, second semester.

102. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. One lecture, one quiz, six hours' laboratory work weekly. Prerequisite, Course 101. Mr. Evans, Mr. Hockett.

A general introductory course on the chemistry of the metals. The laboratory work deals with the elementary principles of qualitative analysis. The course is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses.

105. Elementary Chemistry. Four credit hours. First semester. Mr. Evans, Mr. Day, Mr. Caldwell.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Course 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 105. Mr. Evans, Mr. Day, Mr. Caldwell.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. First semester. One lecture, one quiz, six hours' laboratory work weekly. Mr. Evans, Mr. Holler, Mr. Hockett.

A general course on the chemistry of the non-metals. It is more advanced than Course 105, and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Course 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 109. Time same as Course 109. Mr. Evans, Mr. Hockett, Mr. Caldwell.

A general course on the chemistry of the metals. It is more advanced than Course 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Five credit hours. First semester. Two lectures, one quiz, six hours' laboratory work weekly. Prerequisite, an acceptable course in general chemistry. Mr. McPherson, Mr. Boord, Mr. Underwood.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Two lectures weekly. Prerequisite, an acceptable course in general chemistry and qualitative analysis; also in quantitative analysis except by special permission of the instructor. Mr. McPherson.

This is a general course in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine hours' laboratory work weekly. Laboratory open afternoons. This course must be accompanied or preceded by Course 151-152. Mr. McPherson, Mr. Boord.

A general course in the preparation of typical organic compounds.

CIVIL ENGINEERING

(Office, Brown Hall, Room 33.)

MR. WAID, MR. M'CALL.

121. Surveying and Topographic Drawing. Six credit hours. First semester. Prerequisite, Mathematics 114 or 132, and Engineering Drawing 101.

The work will be divided into lectures, recitations, field work, computing, and drawing in such manner as the schedule and weather will permit.

DAIRYING

(Office, Townshend Hall.)

PROFESSOR ERF, ASSISTANT PROFESSOR CUNNINGHAM, MR. CLEVINGER,
MR. STOLTZ.

The department of dairying occupies the greater part of the first floor of Townshend Hall. It offers good facilities for instruction and investigation. The laboratories are equipped for the following lines of work: Milk testing, care and bottling of sanitary milk, butter making, cheese making, ice-cream making, milk condensing, dairy mechanics.

Individual milk testing apparatus is furnished to each student. In the laboratory are found Babcock centrifuges, balances, etc., to make a complete test of the milk. The department operates a commercial, guaranteed milk and cream distributing plant. It has its own wagons for distributing the products and is equipped with modern milk dealers' implements, such as bottlers, washing outfits, and steam pressure sterilizers. In connection with this plant there is also a refrigerator provided for the bottled milk. The milk is received from two sources, part from an inspected farm and the balance from the University herd. The milk is bottled and sold, the students doing the work.

The farm cream separator laboratory is equipped with various styles of cream separators and coolers. The creamery laboratory is equipped with different types of cream ripeners, pasteurizers, starter cans, churns and printers. Butter is made throughout the year on a commercial basis from milk and cream received from a number of dairies aggregating over 300 cows, and the plant is operated on a regular commercial scale with students doing most of the work. The cheese making laboratory is equipped with a cold curing room and a cellar for making brick and Swiss cheese. Cream cheeses are made each week as a part of the commercial products of the laboratory and instruction is given along this line during the college year. The ice-cream making laboratory is equipped with freezers, brine and ice, and the proper mixing contrivances. A laboratory is provided for milk condensing where a condensing plant is operated for instructional purposes.

Dairy mechanics work is provided for in special laboratories, which are equipped with boilers, engines, a refrigerating plant, pumps, pipe fitting apparatus, and soldering outfit. The laboratory work is of the most practical kind and is supplemented by lectures, recitations and quizzes in the class room.

Lectures and practical demonstrations are given in dairy farm work, especial attention being paid to the Advanced Registry and Cow Testing Association work. The department has charge of this work in Ohio.

The work of the department is designed for three classes of students, the regular students in the two and four-year courses, and the students of the special dairy courses. The latter is arranged for the practical dairyman who cannot devote a longer time to the scientific study of dairy methods.

Four-Year Course

101. Principles of Dairying. Four credit hours. First semester. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures are given on secretion of milk and the testing of milk and cream for butter fat; feeding and caring for dairy cows as related to the economical production of milk; formation of profitable herds; testing individual cows and herds for butter fat production, and entering and testing cows for the Advanced Registries. In the laboratory, practical work will be given in testing milk and cream for butter fat, testing dairy herds for butter fat production, the practice of operating farm cream separators, the care of milk and cream, buttermaking, and cheesemaking, also plumbing and soldering as needed in dairy operations.

102. Farm Dairying. Four credit hours. Second semester. Mr. Erf, Mr. Cunningham.

Lectures will be given on the planning and equipping of dairy barns, milk houses, dairy plants, farm milk houses, refrigerators and arranging of yards. Lectures will also be given on the handling and manufacturing of farm dairy products for the market, dairy farm management, and a study of the comparison of the different systems under various conditions. The

laboratory work will consist of designing dairy barns, dairy plants, dairy houses, refrigerators, etc., the setting up and operating of dairy machinery, scoring dairy farms and dairy plants.

103 or 104. City Milk Supply. Two credit hours. First or second semester. Mr. Cunningham.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking, cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105 or 106. Buttermaking. Five credit hours. First semester and repeated in the second semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107 or 108. Cheesemaking. Three credit hours. First semester and repeated in the second semester. Mr. Clevenger, Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cottage, cream, Cheddar and brick cheeses.

110. Ice-Cream Making and Milk Condensing. Five credit hours. Second semester. Time to be arranged. Mr. Cunningham.

Lectures will be given on the theory of milk condensation and ice-cream making. Practical work with the vacuum pans and sterilizers will be given in the condensing laboratory and practical work in ice-cream making, in the ice-cream laboratory.

111. Dairy Mechanics. Three credit hours. First semester. Mr. Clevenger.

This work consists of one hour lectures and three hour laboratory work. It treats of the construction and operation of steam boilers, steam and gas engines, steam pumps, compressors,

refrigerating machines, belting, hanging of shafting, and pulleys, pipe fitting and soldering, and the operating of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Three credit hours. The year. Mr. Erf.

Seminar on assigned readings in experiment station and other dairy literature will be arranged in this course. Investigation work of special character along any particular line of dairying will be arranged for. Laboratory work will be provided in connection with this work.

117-118. Advanced Dairying. Five to ten credit hours. The year. Mr. Erf.

This course is intended for graduate students.

Special work will be arranged for students desiring to take up any particular phase of dairying. Any apparatus on hand will be furnished and room will be arranged for students desiring to take up any line, such as farm dairying, the feeding and breeding of dairy cows in relation to milk production, the study of milk in its various phases, buttermaking, cheesemaking, milk condensing, ice-cream making, etc.

Two-Year Course.

109. Elementary Dairying. Four hours. First semester. The work offered in this course is similar, in the main, to Course 101. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

DRAWING

(See Engineering Drawing.)

ECONOMICS AND SOCIOLOGY

(Office, Room 211, University Hall.)

PROFESSORS HAGERTY, HAMMOND, GEPHART, MCKENZIE AND LOCKHART,
ASSISTANT PROFESSORS HUNTINGTON AND WALRADT, MISS SHEETS.

I. Economics

135-136. Principles of Economics. Three credit hours. The year. Mr. Hammond, Mr. Gephart, Mr. Lockhart, Mr. Walradt.

A careful study of the laws of production, exchange, distribution, and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures, and individual investigation.

139-140. The Elements of Accounting. Two credit hours. The year. Prerequisite, registration in Economics, 135-136. Tu., Th., at 8 or 9. Mr. Huntington.

In this course the student is made familiar with the essentials of accounting as exemplified in the main types of book-keeping. The main object is to give the student such a grasp of fundamental principles as will enable him to understand the significance of accounts, which with the increasing emphasis on the business side of farming becomes important to the agriculturist as well as to other business men.

***141. Public Finance.** Two credit hours. First semester. Prerequisite, Economics 135-136. Mr. Lockhart.

Public expenditure; public revenues, with special reference to taxation; public credit; the budget; financial administration.

***144. Problems of Taxation.** Two credit hours. Second semester. Prerequisite, Economics 141. Mr. Lockhart.

A course dealing with questions of reform in taxation. The Ohio system of taxation will be given special consideration.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 135-136. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans, financial administration, currency legislation, and the development of banking institutions.

167. Railway Economics. Three credit hours. Second semester. Prerequisite, Economics 135-136. Mr. Hammond.

*Not given, 1913-14.

The development of means of transportation. Railway growth and consolidation. Railway rate theories and practice. Railway commissions and public control. Government ownership of railroads.

II. Sociology

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Mr. McKenzie, Miss Sheets.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading, and individual investigation.

***107. The Family.** Three credit hours. First semester. Prerequisite, Sociology 101-102. Miss Sheets.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions, and its problems.

***120. The Household.** Three credit hours. Second semester. Prerequisite, Sociology 119. Miss Sheets.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman. This course will also consider the present organization of the household from the point of view of its efficiency, and the meaning of the changes which it is undergoing.

ENGINEERING DRAWING

(Office, Room 42, Brown Hall.)

PROFESSOR FRENCH, ASSISTANT PROFESSOR MEIKELJOHN, MR. HARPER, MR. SHEETS, MR. TURNBULL, MR. GILBERT, MR. NORRIS.

101. Elementary Mechanical Drawing. Two credit hours. First semester.

116. Pen Drawing. Two credit hours. Second semester.

119. Clay Modeling. Two credit hours. First semester.

*Not given, 1913-14.

123. Engineering Drawing. Two credit hours. First semester. Required in course in Forestry, first year.

125. Mechanical Drawing. Two credit hours. First semester.

126. Repetition of 125.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Drawing 127.

127 and 128 are required in Home Economics, second year.

137. Engineering Drawing. Two credit hours. First semester. Prerequisite, Drawing 123 or 101.

A course especially for forestry students. Practise in topographic drawing, tracing and blue-printing, and the design of simple engineering structures, such as culverts, trestles, small wooden bridges, and dams.

138. Engineering Drawing. Two credit hours. Second semester. Continuation of 137.

ENGLISH

(English Building.)

PROFESSORS DENNEY, TAYLOR, M'KNIGHT AND GRAVES, ASSISTANT
PROFESSORS DUNCAN, BLANCHARD, BECK.

101. Paragraph Writing. Description and Narration. Two credit hours. First semester. (Course 101 will be repeated in the second semester as Course 102 for the benefit of those who fail, the class meeting Saturdays at 9 a. m.) All instructors.

104. Paragraph Writing. Exposition and Argumentation. Two credit hours. Second semester. Prerequisite, Course 101.

Same hours as for Course 101. (Course 104 is also offered in the Summer Session.) All instructors.

107. Advanced Description and Narration. Two credit hours. First semester. Prerequisite, Course 101. Mr. Graves.

108. Advanced Exposition and Criticism. Second semester. Prerequisite, Course 101. Mr. Graves.

121. Principles of Public Speaking. Two credit hours. First semester. Mr. Blanchard.

122. Debating. Two credit hours. Second semester. Mr. Blanchard.

132. Survey of American Literature. Three credit hours. Second semester. No prerequisite course. Mr. Taylor, Mr. McKnight, Mr. Graves, Mr. Duncan, Mr. Beck.

133. Survey of English Literature. Three credit hours. First semester. No prerequisite course. Mr. McKnight, Mr. Graves, Mr. Duncan, Mr. Beck.

FORESTRY

(Horticultural Hall.)

PROFESSOR LAZENBY, MR. GOETZ, MR. PFLUEGER.

For field work in Forestry, the University estate has a typical primitive woodlot, a fringe of forest trees bordering the Olentangy river, and a good collection of individual trees and shrubs on the campus. Columbus and vicinity offer fairly good opportunities for the study of forestry. Numerous electric car lines take the students, at small cost, to a variety of hard wood forests where different conditions and methods of treatment can be studied. Lumber yards, dry houses, wood working industries, and saw mills are to be found in and near Columbus.

In laboratory work, students receive instruction in timber physics and certain features of wood technology, and for this a collection of wood specimens, sections of trees, etc., are provided, and will be increased as rapidly as possible. Students will be encouraged to carry on original work, and to write theses under the supervision of an instructor. Special credit is given for such work, but a thesis is not required for a degree.

The University library contains a good and rapidly growing collection of books and pamphlets on forestry and quite a number of forestry journals are regularly received.

The department is equipped with a collection of apparatus and woodsman's tools for use in the laboratory and forest.

101. Introduction to Forestry. Two credit hours. First semester.

A general presentation of the subject, its objects, methods, and economic importance. A study of the trees and shrubs in the University woodlot and on the campus. Lectures and field work.

102. Silvics. Two credit hours. Second semester.

A continuation of the study of local trees and shrubs from the forester's standpoint. The biological characteristics not only of species but of stands and societies of trees and shrubs.

103. History and Relations. Two credit hours. First semester.

The history of forestry in other countries to show a parallel to almost every progressive step taken in this country. The relation of forestry and forests to climate, soil, waterways, and general welfare.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Two lectures or recitations, and one two-hour period of field work weekly.

The cultivation and management of trees for various specific purposes, such as windbreaks, hedges, shade and ornament, small plantations for post and pole timber, for maple syrup, for nuts, etc. The care of farm woodlots; treatment of diseased and injured trees.

The above courses while designed for forestry students, are open and adapted to students of other departments.

105. Silviculture. Three credit hours. First semester. Two lectures and three hours' field work weekly.

A review of soil, climate, exposure and other ecological factors influencing forest growth; description of typical woodlands and forests; collecting and testing forest tree seeds. Care of woodlands and forests, including natural regeneration, pruning, thinning, etc.

106. Silviculture. Three credit hours. Second semester. Two lectures and three hours' field work weekly.

A study of forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation; practise in seedbeds and nurseries; sowing seeds and transplanting in forests; establishment, improvement and extension of woodlands.

Prerequisite, Courses 101 and 102.

107. Forest Mensuration and Valuation. Four credit hours. First semester. Three lectures and three hours' field work weekly.

Methods of measuring the volumes of felled and standing trees; of ascertaining the volume of definite forest areas; studying the age, rate of growth and future yield of trees and forests; making stem, stump and sectional analysis; surveys and estimates of values of trees and forest stands.

Prerequisite, Courses 105 and 106.

108. Forest Utilization; Lumbering. Four credit hours. Second semester. Three lectures and one three-hour period of field work weekly.

Methods of lumbering, including transportation and milling, marketing and uses; minor woodlot and forest industries; by-products of the forest.

Prerequisite, Course 107.

109. Forest Management. Four credit hours. First semester. Three lectures and one three-hour period of field work weekly.

Forest surveys and working plans; organization and administration; regulation and finance.

Prerequisite, Courses 105, 106-111.

111. Forest Protection. Two credit hours. First semester. Lectures and recitations.

Protection from fire and other inanimate enemies; from insects, fungi and other animate enemies.

112. Forest Craft. Two credit hours. Second semester. Lectures and practical exercises. Packing; camping; ranger cabins; trails; forest telephone and telegraph lines, first aid to sick and injured.

113. Forest Economics. Two credit hours. First semester. Lectures and recitations.

The economic value and benefits of forests; state and national forest laws and organization; state and national forests, and forest problems; the forest reserves of the United States; civil service regulations; foreign forest service.

Prerequisite, Courses 105 and 106.

114. Forest Policy. Two credit hours. Second semester. Lectures and recitations. Functions of the federal government; the states, counties, municipalities, and communities relative to forestry. Public regulation of privately owned forests.

Prerequisite, Course 113.

116. Forest Products; Timber Physics; Wood Technology. Four credit hours. Second semester. Two lectures and one two-hour laboratory period weekly. The physical properties of wood; various methods of wood preservation; wood working plants and industries; various uses of wood.

Prerequisite, Courses 105 and 106.

117-118. Seminar. One credit hour. The year.

119-120. Advanced Forestry. Three to five credit hours. Investigation and research. Subject to be assigned. Open as a Senior elective in Forestry.

GEOLOGY

(Office, Room 1, Orton Hall.)

PROFESSORS PROSSER AND BOWNOCKER, ASSISTANT PROFESSOR HILLS,
MR. MORSE, MISS MARK, MR. SCHROYER.

The University offers excellent facilities for the study of geology. By an act of the Legislature it has been put in possession of all the collections made by the State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. These collections embrace a representation of every geological formation shown in Ohio. Orton Hall, completed at a cost of more than \$100,000 is designed for the permanent accommodation of the large geological collections of the University, and for the work and instruction of the Department of Geology. The building is two stories in height, with a high basement; is built of brick and faced with sandstone, and is fire-proof throughout. Some of the material was contributed by various quarries of the State of Ohio, and almost all of the finer varieties of Ohio building stone are represented in the columns, walls, and ceiling panels of the vestibule.

152. General Geology. Three credit hours. Second semester. Geology 165 repeated. Mr. Prosser and Mr. Morse. Field trips last half of the semester on Friday afternoon or Saturday morning.

153. Applied Geology. Three credit hours. First semester. Prerequisite, Geology 165 or 152. Mr. Bownocker and Mr. Hills.

The common minerals and rocks of the earth's crust, their breaking down and the formation of mantle rock, fuels, building stones, lime, cement, and the most useful metals are studied.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere, and the ocean. Recitations, lectures, map work, and field work.

165. General Geology. Three credit hours. First semester.

The first half of the semester, or while the weather permits, field trips will alternate with the laboratory periods. Field trips Friday afternoon or Saturday morning, when the laboratory work will be omitted for that week. Mr. Prosser and Mr. Morse.

Structural, dynamical, and historical geology. The lectures are illustrated by maps, specimens, and lantern views. The common rock-forming minerals and rocks are studied in the laboratory; while in the field various illustrations of geological structure are pointed out and formations identified.

For Advanced Undergraduates and Graduates

For prerequisites for the following courses see the Graduate Bulletin.

105. Field Geology. First semester. Three to five credit hours. Mr. Prosser.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

Study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurements of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three hours. Second semester. Mr. Bownocker.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Laboratory open afternoons, 1 to 4, and on certain days in the morning. Mr. Prosser.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the faunas that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work, fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of faunas is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three or more hours. First semester. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin; the non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals, emphasis will be laid on the products of Ohio.

GERMAN

(Offices, Rooms 317 and 318, University Hall.)

PROFESSORS EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, LEWISOHN AND BUSEY, MR. WHITE AND MR. RUDWIN.

101-102. Elementary German. Four credit hours. The year.

103. Intermediate German. Four credit hours. First semester. Prerequisite, 101-102, or two entrance units.

104. Easy Classical Readings and Composition. Four credit hours. Second semester. Prerequisite, 103, or three entrance units.

106. Science Reading. Four credit hours. Second semester. Prerequisite, 103, or three entrance units.

Students offering four units in German should take Course 107-108. Modern and classical prose and verse. Four credit hours.

HOME ECONOMICS

(Office, Hayes Hall.)

PROFESSOR WARDALL, ASSOCIATE PROFESSOR WHITE, MISS BLOHM, MISS HATHAWAY, MISS CRANE.

101-102. Foods. Four credit hours. The year. Prerequisite, Chemistry, 106 or 110. Miss White. Miss Crane.

A study of nutrients; their occurrence in ordinary foods, their cost from various sources, and the principles involved in their preparation. Lectures and recitations are combined with laboratory work.

104. The House. Three credit hours. Second semester. Miss White.

Situation of the house with regard to general surroundings. The householder's interest in the construction of the house. Sanitary conditions in and around the house. Ventilation, water supply, heating, and plumbing. The purpose of the house. Prerequisite, Bacteriology 107.

105-106. Seminar. Two to five credit hours. The year. Open only to fourth year and graduate students. Miss Wardall.

107. Household Management. Three credit hours. First semester. Prerequisite, Courses 101-102, Economics 135-136 or 138. Miss White.

The aim of this course is to set forth some of the principles underlying housekeeping, including the organization of the household, the division of income, household processes, and care of the household.

108. Teachers' Course. Three credit hours. First semester. Open to seniors. Miss Wardall.

110. Dietetics. Four credit hours. Second semester. Prerequisite, Foods 101-102, Physiology 101-102, and Agricultural Chemistry 123-124. Miss Wardall.

A study of the chemical, physiological, and economic factors entering into the normal diet, examination of dietary standards and views of different workers. Some attention to abnormal diet will be given. Laboratory work includes translation of standard dietaries into food materials and some exercise in making dietary studies. Practice is also given in preparation of food for the sick.

111-112. Textiles. Two credit hours. The year. Prerequisite or concurrent, Art 101-102. Miss Blohm.

This course includes the study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of articles involves the proper selection of material and the working out of suitable designs.

113. Dress. Three credit hours. First semester. Prerequisite, Course 111-112; Art 105-106 must be taken with this work. Miss Hathaway.

In this course economics, hygiene, design, and color are considered in their relation to dress. The laboratory work includes the drafting and designing of patterns, the careful selection and combination of materials, and the making of a simple unlined cloth dress.

114. Household Art. Three credit hours. Second semester. Prerequisite, or concurrent, Art 105-106. Miss Blohm.

This course includes the study of the evolution of the house, of house furnishings, their color, design, and suitability for purpose and cost. The laboratory work consists of visits to shops, the making of plans and estimates for house furnishing, the designing and making of accessories in furnishing and decorating the house.

Note.—In all courses students provide their own materials.

116. Dress. Three credit hours. Second semester. Miss Hathaway. Continuation and amplification of Course 113.

In the lectures an outline of the history of costume will be given. The laboratory work continues Course 113 in the drafting and designing of patterns, and includes the making of silk and draped dresses.

HORTICULTURE

(Horticultural Hall.)

PROFESSOR PADDOCK, ASSISTANT PROFESSORS DAVIS AND MONTGOMERY.

101. Principles of Horticulture. Four credit hours. First semester. Four-year course in Horticulture. Mr. Davis.

The principles of plant growth, with special reference to horticultural crops, including the problem of tillage, drainage, frosts, weeds, insects, propagation, pruning, and spraying.

102. Principles of Horticulture. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of 101. Assistant Professor Davis.

103. Olericulture or Vegetable Gardening. Four credit hours. First semester. Four-year course in Horticulture. Mr. Montgomery.

Including a study of locations, soils, manures, and fertilizers, marketing, etc., as related to the home and market garden. Each of the garden vegetables is considered specifically.

104. Olericulture or Vegetable Gardening. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of 103. Mr. Montgomery.

105. Pomology. Four credit hours. First semester. Four-year course in Horticulture. Mr. Paddock.

Including the propagation, pruning, spraying, cultivating, harvesting, etc., with special reference to the fruit commonly grown in the temperate zone. Tropical and sub-tropical fruits of commercial importance in the North will also receive consideration. Prerequisite, Horticulture 101.

106. Pomology. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of 105. Mr. Paddock. Prerequisite, Horticulture 105.

107. Plant Variation. Three credit hours. First semester. Four-year course in Horticulture. Mr. Paddock. Prerequisite, Horticulture 105 and 106.

A course designed for those interested in plant breeding and in the modification and improvement of plants by mutation, crossing, dwarfing, forcing, etc., together with a discussion of the current theories of evolution as applied to the variation and melioration of plants under cultivation.

108. Landscape Gardening. Three credit hours. Second semester. Two and four-year courses in Horticulture. Mr. Montgomery.

A study of the art of producing picture-like or landscape effects; the making of lawns, walks, drives, and the correct planting of trees, shrubs, and flowers for the external adornment of home and public grounds.

109. Experimental Horticulture. Three credit hours. First semester. Four-year course in Horticulture.

This course is designed to give the student training in research methods. Technical problems are assigned depending on the needs and the inclination of the student. This work not only gives practice in the application of exact methods, but affords abundant opportunities to become familiar with the literature of horticulture. Prerequisite, Horticulture 103, 104, 105 and 106.

110. Experimental Horticulture. Three credit hours. Second semester. Four-year course in Horticulture. A continuation of 109.

111. Principles of Horticulture. Four credit hours. First semester. Two-year courses in Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as 101 and 102 modified and adapted to the needs of the two-year students.

112. Principles of Horticulture. Four credit hours. Second semester. Two-year courses in Horticulture and Agriculture. A continuation of 111. Mr. Davis.

113. Pomology. Four credit hours. First semester. Two year course in Horticulture. Mr. Paddock.

This course is essentially the same as 105 and 106 modified and adapted to the needs of the two-year students. Prerequisite, Horticulture 111 and 112.

114. Pomology. Four credit hours. Second semester. Two-year course in Horticulture. A continuation of 113. Mr. Paddock.

115. Olericulture or Vegetable Gardening. Four credit hours. First semester. Two-year course in Horticulture. Mr. Montgomery.

This course is essentially the same as 103 and 104 modified and adapted to the needs of the two-year students. Prerequisite, Horticulture 111.

116. Olericulture or Vegetable Gardening. Four credit hours. Second semester. Two-year course in Horticulture. A continuation of 115. Mr. Montgomery.

118. Pomology. Four credit hours. Second semester. Four-year course in Agriculture. Mr. Davis.

This course deals with the fundamental problems of fruit growing, with special reference to the home or farm orchard and small fruits. The problems of soil location, propagation, pruning, spraying, cultivation, harvesting and marketing receive special consideration. Open only to third and fourth-year students in the college of agriculture.

119. Floriculture. Three credit hours. Second semester. Four-year course in Horticulture.

A discussion of the history, propagation and culture of florists' plants, and the diseases and insects that prey upon them.

INDUSTRIAL ARTS

(Office, Room 2, Hayes Hall.)

PROFESSOR SANBORN, MR. CROWE, MR. BEEM.

The shops occupy the north wing of Hayes Hall and afford excellent facilities for instruction in both the practical details and the underlying principles of carpentry, pattern-making and forging. The carpenter and pattern shops are equipped with fifty benches with complete sets of carpenter tools for each, twenty-four turning lathes with the necessary turning tools, a spony planer, a buzz planer, a circular rip and cross-cut saw, a scroll saw, a band saw, a trimmer, and two power grindstones. The forge shop is equipped with twenty-five stationary forges with anvils and tools for each, a heating furnace, a gas furnace for hardening and tempering with pyrometer for high temperature measurements, a foot power hammer, a blacksmith drill, and punch shear and bar cutter.

Shop Work

101 or 102. Carpentry and Pattern Making. Two credit hours. First or second semesters.

Practise in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings.

103 or 104. Forging. Two credit hours. First or second semesters.

The use and care of forge, fire, and tools; practise in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

MATHEMATICS

(Office, Room 314, University Hall.)

PROFESSORS BOHANNAN, M'COARD, SWARTZEL AND KUHN, ASSOCIATE PROFESSOR RASOR, ASSISTANT PROFESSORS PRESTON AND MORRIS.

103. Elementary Algebra. Five credit hours. First semester. Text-book, Venable's.

104. Plane Geometry. Five credit hours. Second semester. Text-book, Venable's.

121. Trigonometry and College Algebra. Three credit hours. First semester.

Trigonometry is taken up at the beginning of the semester and College Algebra is studied in connection with Trigonometry as it may be needed throughout the semester.

122. Analytical Geometry and College Algebra. Three credit hours. Second semester.

Analytical Geometry is taken up at the beginning of the second semester and College Algebra is also studied in connection with this subject as may be needed. In this way College Algebra is continued through the year in connection with Trigonometry and Analytical Geometry.

METEOROLOGY

(Townshend Hall.)

PROFESSOR J. WARREN SMITH.

101. Elementary Meteorology. Two credit hours. First semester. Text-book, Moore's Descriptive Meteorology.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

102. Agricultural Meteorology. Two credit hours. Second semester. Prerequisite, Course 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered. Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development, or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

CAPTAIN GEORGE L. CONVERSE, U. S. A. (RETIRED)

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, there-

fore, requires all male students including so-called special students, to drill during two years unless excused by the Military and Gymnasium Board. This work is under an officer of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

Equipment

The equipment of the Military Department comprises 1,000 standard U. S. Magazine rifles, with belts, bayonets and accoutrements, 51 regulation infantry officers' sabres and belts, 25 cadet swords and belts, a stand of regimental colors, with markers, guidons, etc. The target practice equipment comprises six Springfield gallery rifles and seven Winder-Model Winchester gallery rifles, five targets for 100, 200 and 300 yards, and five Winder-Model targets for long range. The band comprises about 60 pieces, partly supplied by the University and partly owned by the members.

The office is equipped for recording the attendance and performance of each cadet in drill, target practise, and classroom work.

Organization

Cadet regiment is organized into three battalions of four companies each, a band, and trumpet corps. Each battalion has its own staff officers. The total number of men under arms averages about one thousand at present. Service in the band is credited as military service. The appointment of cadet officers during the second year of service is for excellence in their work. These officers may continue to serve during the third and fourth years if they wish, and if they do, are given compensation at the end of each year's satisfactory service, amounting to not less than twenty-five (\$25.00) dollars for lieutenants, thirty (\$30.00) dollars for captains, and larger sums for officers of higher ranks. Members of the band who volunteer for service after having completed their two years required duty, are also paid at the rate of \$20.00 per year, and receive instruction during the four winter months by a competent band-master.

1. **Military Drill.** One credit hour. Five months, three hours per week (divided between fall and spring) military drill, four months, three hours per week (winter), of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of winter months, at 100, 200, and 300 yards. Lecture one hour weekly by the President, upon topics of common interest to the student body.

2. **Military Drill.** One credit hour. Five months, three hours per week (divided between fall and spring), in extended order and guard duty. Four months, three hours per week (winter) of class-room instruction in Articles of War, guard, manual and field service regulations. Target practice, at any open hour of the afternoons of the winter months, at 500, 600, and 800 yards.

Caution.—New students are cautioned not to buy uniforms until they have received full instructions from the Commandant of Cadets. Second hand uniforms **must** be inspected by the Commandant before purchased.

PHYSICAL EDUCATION

DR. H. S. WINGERT, DIRECTOR.

The work in Physical Education for men and women is conducted under the direct supervision of the Professor of Physical Education, who is a graduate physician. For the men's work he has two assistants and twenty student aids, who are selected each year from those who show proficiency in their work. For the women's work there is an associate professor, who is a graduate physician. She has a student assistant and twenty aids, who are chosen because of their proficiency.

The main floor of the gymnasium (80 x 150 feet) is well equipped with modern gymnastic apparatus. It is used by the women in the forenoon, while the men exercise in the gymnasium on the first floor. In the afternoon the main floor is used exclusively by the men for class work, athletics, basketball, and other recreative games.

(A) FOR MEN

(The Gymnasium.)

PROFESSOR WINGERT, MR. OHLSON, MR. BARTHOLOMEW

1. Physical Education. One credit hour. Two hours per week. The year. Required of all first-year students in this college. This course consists of (a) Lectures on personal hygiene and physiology of exercise one hour per week, first eight weeks, first semester. (b) Corrective: A graded course of freehand exercise, stretching, relaxing, stimulating, exercise with light hand apparatus for the relief and correction of slight body defects, deformities, improper carriage, etc. (c) Educative: Graded progressive exercise on the apparatus and mats to promote muscular tone, vigor, vitality, endurance. (d) Recreative: Gymnasium games, mental relaxation, non-competitive exercises.

A thorough physical examination is made of each student at the opening of the college year. Physical defects, abnormalities, and weaknesses are noted, and judicious, healthful exercise is prescribed to fit the student's individual needs.

2. Advanced Exercises. Elective. (a) Advanced exercises on the apparatus and mats. (b) Combative exercises—boxing, fencing, wrestling. A small charge is made to those electing this work. (c) Recreative—football, baseball, basketball, tennis, track and field sport, cross-country running, etc. (b) Swimming—an excellent pool is provided for this exercise. Special hours are arranged for those electing the above exercises and credit given in regular course.

(B) FOR WOMEN

(The Gymnasium.)

DR. LITTLEJOHN, MISS SAUER.

1. Physical Education. One credit hour. Four hours per week during the first year of a student's residence. (a) Lectures on hygiene and purpose of different kinds of physical exercises, four hours per week, first two weeks of first semester,

first week of second semester. (b) Practical work in gymnasium, as follows: (1) Corrective work; exercises for correction of faulty position of different parts of body, and of deformities; for development of chest, etc. (2) Educative work: exercises to develop co-ordination of groups of muscles, accuracy of movement, and to impart grace and beauty and a ready expression of thought in physical motions. (3) Recreative: classic dancing, and rhythmic movements, gymnastic games, and relaxing exercises. (4) Athletics (elective): carefully supervised basketball, running, swimming, etc., for those who desire it. A physical examination is made by the directors of every woman entering this course before she can begin the gymnasium work, and, if necessary, special work will be prescribed to meet her physical needs.

2. Physical Education. One credit hour. The year. Four hours per week during the second year of a student's residence.

PHYSICS

(Office, Room 24, Physics Building.)

PROFESSOR COLE, MR. HEIL.

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practise. Other courses in Physics may be elected by four-year students in Agriculture.

ROMANCE LANGUAGES AND LITERATURES

(Office, Room 305, University Hall.)

PROFESSORS BOWEN AND BRUCE, ASSOCIATE PROFESSOR INGRAHAM,
ASSISTANT PROFESSOR HAMILTON, MR. CHAPIN, MR. ROCK-
WOOD, MR. BOND, MR. ———.

I. French

101-102. Elementary French. Four credit hours. The year. Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies. Ten sections. All instructors.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition made to contribute to this end. Sight reading is emphasized.

103-104. Modern French Literature. Four credit hours. The year. Five sections. Prerequisite, course 101-102, or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Rockwood.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practise in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

II. Spanish

101-102. Elementary Spanish. Four credit hours. The year. Grammar: Ingraham-Edgren's, or equivalent, and Ingraham's Victoria y Otros Cuentos. Easy prose and plays. Composition and practise in speaking. Four sections. Mr. Ingraham, Mr. Hamilton, Mr. Chapin.

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Course 101-102, or equivalent. Mr. Ingraham, or Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practise in speaking continued.

RURAL ECONOMICS

(Office, Room 100, Townshend Hall.)

PROFESSOR PRICE, MR. PHILLIPS.

The department includes instruction in farm management, farm accounts, history of agriculture, and agricultural economics.

The facilities offered for the study of farm management include the University farm, containing over three hundred acres,

and the records that have been kept of its operations for many years. Adjoining Columbus, and within reach by electric cars, there are many well equipped and well managed farms, which are frequently visited by classes in this department.

For the study of the history of agriculture and agricultural literature, the University Library offers excellent facilities in the large number of agricultural works which it contains and the complete files of agricultural periodicals. In the study of agricultural economics. Opportunity is given to study the problems of marketing distribution and co-operation at first-hand, and excursions are made in the State to investigate agricultural conditions.

101. Farm Accounts and Records. Two credit hours. First semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

102. Farm Management. Four credit hours. Second semester. Two-year courses in Agriculture and Horticulture. Mr. Phillips.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a comparative study of the different systems of farm management; the cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands; and keeping farm accounts and records.

103. Farm Management. Four credit hours. First semester. Four-year course in Agriculture. Mr. Price.

Lectures and recitations upon the problems of farm management, the relative profits of different systems of farm management, and their effect upon maintaining the fertility of the land. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Second semester. Mr. Price.

Lectures and recitations upon the production, distribution, transportation, and marketing of agricultural products. The relation of the industry of agriculture to other industries, co-operation in agriculture, agricultural organizations, and the social conditions of agricultural communities are considered.

105. Historical and Comparative Agriculture. Three credit hours. First semester. Mr. Price.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

107-108. Research Work for Graduate Students. Five to ten credit hours. Mr. Price.

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and in agricultural economics.

SHOP WORK

(See Industrial Arts.)

SPANISH

(See Romance Languages.)

VETERINARY MEDICINE

(Office, Veterinary Laboratory.)

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT.

Students in Agriculture, taking required or elective work in Veterinary Medicine, may avail themselves of the whole equipment of the College of Veterinary Medicine. For the class-room work, a large number of papier-mache models, wet

and dry anatomical specimens, sample horseshoes, charts, diagrams and drawings, surgical instruments, and apparatus are constantly employed to supplement text-book teaching. The Clinic Building affords excellent facilities for the care and treatment of diseased and injured animals.

The Veterinary Laboratory building is especially designed for the teaching of Veterinary Medicine. It contains the Anatomical Museum, probably the largest in the country, a modern sanitary dissecting room and laboratories for pathology, pharmacology and bacteriology.

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common sporadic and infectious diseases, minor surgery, castration, horse-shoeing and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and ox.

ZOOLOGY AND ENTOMOLOGY

(Office, Room 1, Biological Hall.)

PROFESSORS OSBORN AND LANDACRE, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSOR BARROWS, MISS M'LELLAN.

Work in this department is largely on the laboratory plan, the effort being to have each student become familiar with typical forms of animal life, acquire the power to discover facts for himself, and use them in practical applications. Animals that have an important economic relation are used as examples for their respective groups. While the aim is to give a thorough and sound training in the underlying principles of zoology and entomology, the practical bearing of these is shown by the use of such forms as the liver fluke of sheep to show effect and relations

of parasitism; the earth-worm in its relation to soil formation; trichina as affecting human health and meat exports; insects, both useful and injurious; fishes as a source of food; relation of birds to insect control; and importance of certain groups of birds and mammals as the source of our domestic animals. Advanced and graduate courses provide for training in methods of research, and especial attention is given to preparation for investigation in experiment stations and the government bureaus.

101-102. Elementary Zoology. Three credit hours. First semester, invertebrates to the anthropods. Second semester, anthropods and vertebrates. Mr. Osborn, Mr. Landacre, and Mr. Barrows.

This course includes a general discussion of groups, dissection of types, and an outline of classification. Especial attention is given to forms of economic importance either from their detrimental effects on crops, stock, etc., or from their utility in various industries or as domestic species.

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Course 101-102. Mr. Osborn and Mr. Hine.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in Entomology. Preparation of collections, essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

109-110. Systematic and Practical Entomology. Three credit hours. The year. Elective in short course in Agriculture. Required in short course in Horticulture. First year. Mr. Hine.

111. Parasites of Domestic Animals. One credit hour. First semester. Elective. Mr. Osborn.

A lecture course devoted to the principal parasites affecting domestic animals, intended especially to meet the needs of those who intend to give particular attention to stock raising.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in Junior or Senior years. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Courses 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological investigators in experiment stations or as teachers in agricultural schools. They may be taken as graduate courses if not elected earlier, or continued as special lines of research during a graduate course embracing other special subjects.)

143-144. Zoological Seminar. One credit hour. The year. Mr. Osborn, Mr. Landacre, Mr. Hine.

Discussion of recent literature in zoology and entomology, reviews of progress in certain lines of investigation and presentation of research studies. Advanced students in Zoology and Entomology are expected to elect this course, and it is open to others who have had preliminary courses.

129. Quantitative Studies in Variation and Heredity. Two credit hours. First semester. Elective. Recommended for juniors taking agronomy, animal husbandry, or horticulture, and should be taken with Botany 121. Prerequisite, Zoology 101.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practise in measuring, assembling, and analyzing data, and the

plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practice in handling and analysis of Mendelian data.

130. Continuation of 129. Including a study of the effects of selection, in-breeding, crossing, and environment, and a study of eugenics. Four credit hours. Second semester. Elective. Prerequisite, Zoology 129.

Half of the semester will be spent in a study of the reactions of animals to external stimuli and the relations of their reactions to the normal activities of the animals and to practical problems.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee—The fee for students who are residents of Ohio is ten dollars a semester. For non-residents, the fee is fifteen dollars a semester. Students must reside in Ohio one year before they are eligible under the resident fee. Children of non-resident Alumni pay the same fee as residents of Ohio.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Fees—A fee of two dollars a semester is charged for all laboratory courses using gas, water, electrical current or steam. For all other courses which are not purely lecture courses, a laboratory fee of one dollar is charged. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee—The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform—The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that second hand uniforms were unfit to wear and certainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union—A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union, consistent with the Constitution and House Rules governing it.

Graduation Fee—A fee of five dollars, to cover expense of graduation and diploma, is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board.—Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons, by young men, at reasonable rates.

Text-Books—Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidentals	\$ 20.00
Ohio Union	2.00
Gymnasium Locker	4.00
Laboratory Fees	16.00
Deposits to cover laboratory materials and breakage	20.00
Uniform	12.00
Books	15.00
Board—36 weeks at \$3.50 per week.....	126.00
Room rent, at \$8.00 per month.....	72.00
General Expenses	75.00
	<hr/>
	\$362.00

The item of general expenses is always subject to the personal habits of the individual, and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

Women Students—As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed three dollars and a half a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

FREE SCHOLARSHIPS

A free scholarship good for two years in the College of Agriculture is granted to one student annually from each county in Ohio, but not more than two scholarships can be in force at one time from any county.

Each scholarship is valid for two years from its grant and covers incidental and fixed laboratory fees. In the chemical laboratories a student holding a free scholarship is required to pay for materials used and to make a deposit to cover breakage the same as other students. In case of other than new students, the scholarship will be accepted only after approval by the Board of Trustees, but in no case will the benefits of scholarships be granted to a student for more than two years. All scholarships must be presented to the Secretary of the Board of Trustees on or before November 1st of the year in which they are to be used, otherwise they are not valid.

The free scholarships cannot be used in the special winter term courses. The appointments are made by the County Boards of Agriculture, and are not transferable by the appointees. To learn whether the scholarship of a given county for the current year has been granted, inquiry should be addressed to the Secretary or President of the County Agricultural Society. For further information concerning these scholarships, inquiries should be addressed to the Dean of this College.

CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association has come to occupy a prominent place in university life. It has a membership of about six hundred men, and is affiliated with the World's Student Christian Federation.

Religious meetings are held for men on Wednesday evening; there are also frequent meetings for the promotion of social intercourse and good fellowship. Courses in systematic Bible study and in modern missions are offered. A most helpful feature of the work is that in the interest of new students at the opening of the school year. Desirable rooms and boarding places are found and posted for reference at the Association Office. Representatives of the Association meet the trains, assist students in finding satisfactory locations, and endeavor in every way to make them feel at home. The Employment Bureau helps to find work.

A copy of the Students' Handbook, giving information about Columbus, the University, and the various college organizations and activities, will be sent free to prospective students. For this handbook or for further information, address the General Secretary of Y. M. C. A., University Campus, Columbus, Ohio.

The Young Women's Christian Association holds religious meetings regularly at noon on Tuesdays. This organization is active and efficient in working for the higher interests of the young women.

SELF-SUPPORT

There is a large amount of work on the University farm and campus and in the gardens, orchards, and greenhouses, which can be done by students, and for which they are paid at current rates for such labor. Each year several thousand dollars are paid out in this way. By this means, together with what can be earned by steady labor during the summer vacation, a considerable number of students defray all their expenses.

Preference is given to students who are willing to devote a certain number of hours each day to the work assigned. Self-support does not relieve students from cadet service. Prospective students are advised to make note of this fact before deciding to enter the University.

Work cannot be promised to all applicants, and is not guaranteed to any.

Applications from men students for employment should be made to the Superintendent of the University farm. Labor blanks will be furnished upon request.

The Dean of Women will advise women students desiring employment. Such students and persons desiring student help, may register with her.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given principally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

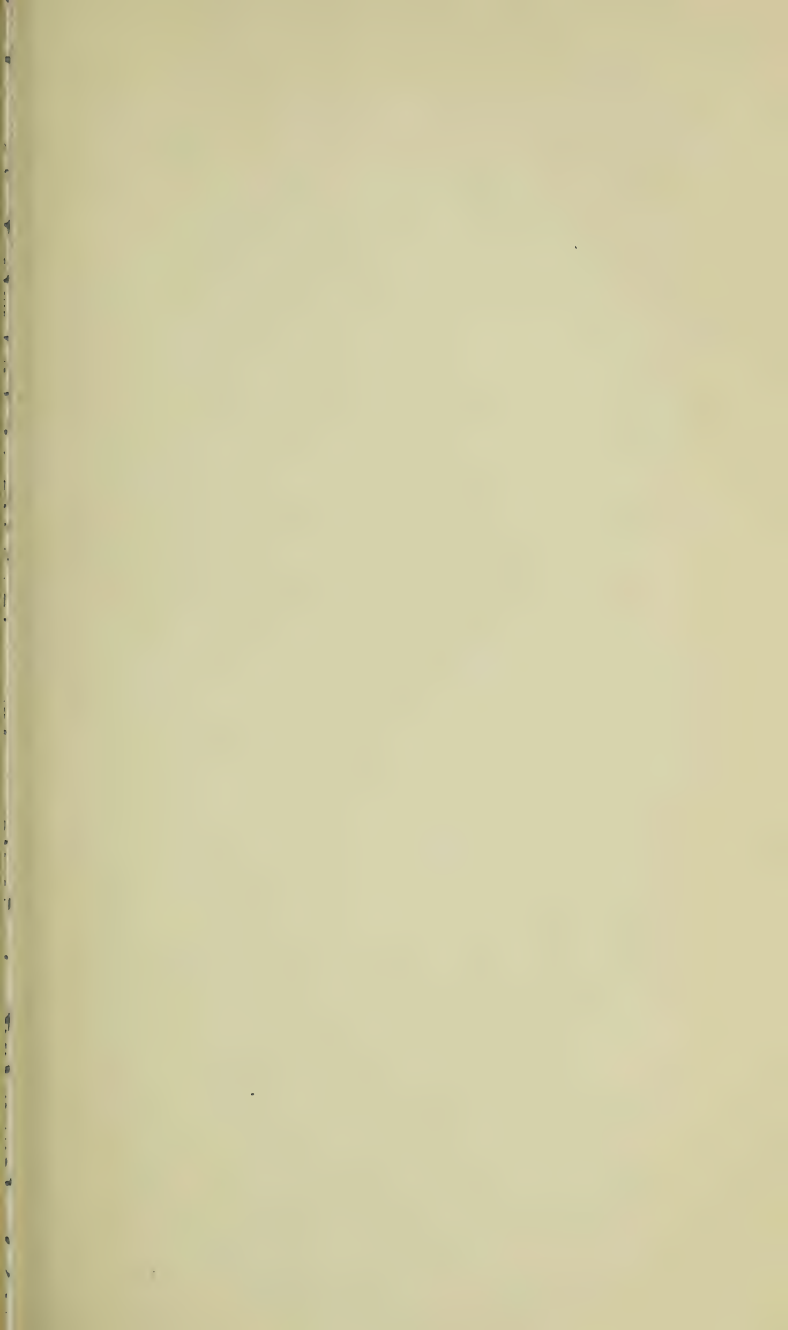
Home Makers' Course. Cooking, Baking, Canning, Home Decorations and Home Economics.

No farm or household practises are given, except such as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at important fairs and expositions are supplied, instruction for the agricultural trains is furnished, and special bulletins, designed to awaken interest in agricultural education, are published.

Nearly twenty thousand men and women have attended the Agricultural Extension Schools; over forty-five thousand visited the agricultural trains in 1911; thirty thousand farmers, teachers, and school children receive bulletins published by this department every month.

For a bulletin of information concerning these Agricultural Extension Schools, address the University Editor. For information not contained in this bulletin and for information regarding other forms of Extension work, address the Superintendent of Agricultural Extension, Ohio State University, Columbus.



The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September and June, and bi-weekly in October, November, December, January, February, March, April and May.

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The Ohio State University Bulletin

VOLUME XVIII

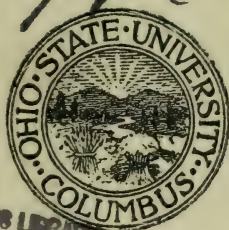
JANUARY, 1914

NUMBER 16

COLLEGE OF AGRICULTURE

1914-15

R. H. George.
The Ag. Student
J. D. V.
Col. C.



UNIVERSITY OF ILLINOIS LIBRARY

AUG 17 1917

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THE OHIO STATE UNIVERSITY

The Ohio State University, located in Columbus, is a part of the public educational facilities maintained by the State. It comprises seven colleges and a graduate school:

The College of Agriculture,
The College of Arts, Philosophy, and Science,
The College of Education,
The College of Engineering,
The College of Law,
The College of Pharmacy,
The College of Veterinary Medicine,
The Graduate School.

This bulletin of announcements is devoted exclusively to the work of the College of Agriculture, offered during the academic year, beginning September, 1914.

Note.—The University publishes a bulletin descriptive of each college. Copies may be obtained by addressing W. E. Mann, University Editor, Columbus, Ohio, and stating the college in which the writer is interested.

UNIVERSITY CALENDAR

1914

Entrance Examinations, Tuesday to Saturday, June 9 to 13 (8 a. m.).

Summer Session, June 22 to August 14.

Entrance examinations, Tuesday to Saturday, September 8 to 12 (8 a. m.).

First Semester begins—Registration Day—Tuesday, September 15.

President's Annual Address, Friday, September 18 (11 a.m.).

Latest date of admission to candidacy for a degree at the Commencement of June 1915, Thursday, October 1.

Date for mid-semester reports to the Deans concerning delinquent students, Wednesday, November 18.

Thanksgiving recess begins November 25 (6 p. m.) and ends December 1 (8 a. m.).

Christmas recess begins Saturday, December 19 (12 m.).

1915

Christmas recess ends Tuesday, January 5 (8 a. m.).

Winter Course in Agriculture and Dairying begins Monday, January 4.

Final examinations, Friday, January 29, to Thursday, February 4.

First semester ends Thursday, February 4 (6 p. m.).

Second semester begins—Registration Day—Tuesday, February 9.

Washington's Birthday, Monday, February 22.

Date for mid-semester reports to the Deans concerning delinquent students, Saturday, March 20.

Easter recess, Saturday, March 27 (12 m.), to Tuesday, April 6 (8 a. m.).

Competitive Drill—Cadet Regiment—Saturday, May 22.

Memorial Day, Sunday, May 30.

Final examinations, Friday, June 4, to Thursday, June 10.

Entrance examinations (8 a. m.), Tuesday, June 8, to Saturday, June 12.

Commencement, Wednesday, June 16.

COLLEGE OF AGRICULTURE

The College of Agriculture offers ten distinct courses of study:

1. A four-year course in Agriculture.
2. A four-year course in Horticulture.
3. A four-year course in Forestry.
4. A four-year course in Home Economics.
5. A three-year course in Agriculture.
6. A three-year course in Horticulture.
7. An Apprentice's course in Animal Husbandry.
8. A winter course in Dairying.
9. An eight-week winter course in Agriculture.
10. An eight-week winter course in Poultry Husbandry.

The four-year courses of this College are regular collegiate courses of the University and lead to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Horticulture, Bachelor of Science in Forestry, and Bachelor of Science in Home Economics. The requirements for admission to these courses are given in the following pages.

The short courses are for students who are not so well prepared and are unable to spend four years in the University. It has been found, however, that a large proportion of those who enter the short courses find time and means to continue one of the four-year courses.

FACULTY AND INSTRUCTORS

WILLIAM OXLEY THOMPSON, D. D., LL. D., PRESIDENT of the University.

HOMER CHARLES PRICE, M. S. A., DEAN, PROFESSOR of Rural Economics.

VERNON C. SMITH, B. Sc. (Agr.), Assistant to the Dean.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), SECRETARY, Professor of Agricultural Engineering.

DEPARTMENTS REPRESENTING THE TECHNICAL WORK OF THE COLLEGE

Agricultural Chemistry.

ALFRED VIVIAN, Ph. G., Professor.

JOHN F. LYMAN, Ph. D., Associate Professor.

Assistant Professor.

*MYRON A. BACHTELL, B. Sc. (Agr.), Instructor.

THOMAS G. PHILLIPS, B. Sc. (Agr.), Instructor.

E. B. HAWES, Assistant.

Agronomy.

ARTHUR GILLETT MCCALL, B. Sc. (Agr.), Professor.

HARRY CLIFFORD RAMSOWER, B. Sc. (Agr.), Professor.

†GEORGE LIVINGSTON, B. Sc. (Agr.), Assistant Professor.

MALCOLM SEWELL, B. Sc. (Agr.), Assistant.

MALON YODER, B. Sc. (Agr.), Assistant.

Animal Husbandry.

†CHARLES SUMNER PLUMB, B. Sc., Professor.

FREEMAN S. JACOBY, B. Sc. (Agr.), Assistant Professor of Poultry Husbandry.

D. J. KAYS, B. Sc. (Agr.), Assistant Professor.

† Absent on leave, 1913-14.

WILLIAM HISLOP, B. Sc. (Agr.), Instructor.
GILBERT GUSLER, B. Sc. (Agr.), Assistant.
*WILLIAM H. PALMER, B. Sc. (Agr.), Assistant.
DAVID MAXWELL FYFFE, Superintendent of Live Stock.

Agricultural Extension.

ALBERT B. GRAHAM, Superintendent.
C. S. WHEELER, Assistant.
RUTH JAMES, Assistant.
HARRY E. ESWINE, Assistant.
GEO. B. CRANE, Extension Editor.

Dairying.

OSCAR ERF, B. Sc. (Agr.), Professor.
OMER COLE CUNNINGHAM, B. Sc. (Agr.), Assistant
Professor.
WILLIAM L. CLEVINGER, B. Sc., Instructor.
ROBERT B. STOLTZ, B. Sc. (Agr.), Assistant.

Home Economics.

EDNA NOBLE WHITE, B. A., Professor.
ANNA R. VAN METER, Assistant Professor.
ANNA FRANCES BLOHM, B. A., Instructor.
LILA SKINNER, Instructor.
MRS. GRACE WALKER, Instructor.
MABEL ROGERS, Instructor.
SARAH STIMMEL, Instructor.
MAUDE C. HATHAWAY, B. Sc., Instructor.
*HELEN SCOTT, B. Sc., (Dom. Sc.), Assistant.
*MAUD OKEY, B. S. (Dom. Sc.), Assistant.
*TREVA KAUFFMAN, B. Sc. (Dom. Sc.), Assistant.
*MARY BETZ, B. Sc. (Dom. Sc.), Assistant.
*MARIAN LUCAS GARVIN, B. Sc. (Dom. Sc.), Assistant.
*CLARA SMITH RODGERS, (Dom. Sc.), Assistant.

THE OHIO STATE UNIVERSITY

Forestry.

WILLIAM R. LAZENBY, M. Agr., B. For., For. Eng.,
Professor.

NORMAN E. SCHERER, Assistant Professor.

OTTO W. PFLUEGER, B. Sc. (Agr.), Assistant.

Horticulture.

WENDELL PADDOCK, M. Sc., Professor.

VERNON HAYES DAVIS, M. S. A., Assistant Professor.

LEWIS M. MONTGOMERY, M. Sc. (Agr.), Assistant
Professor.

*ROBERT B. CRUICKSHANK, B. Sc. (Agr.), Assistant
Professor.

Rural Economics.

HOMER CHARLES PRICE, M. S. A., Professor.

J. WARREN SMITH, Professor of Meteorology.

THOMAS D. PHILLIPS, B. Sc. (Agr.), Instructor.

Those marked with (*) in Horticulture, Agricultural Chemistry, Animal Husbandry, Agronomy, Home Economics, and Dairying, are employed in the Extension Department.

DEPARTMENTS OF GENERAL SCIENCE FUNDAMENTAL TO THE WORK OF THE COLLEGE OF AGRICULTURE

Anatomy and Physiology.

ALBERT MARTIN BLEILE, M. D., Professor.

RAYMOND JESSE SEYMOUR, M. S., M. D., Associate
Professor.

EDWIN POE DURRANT, M. A., Assistant Professor.

Bacteriology.

CHARLES BRADFIELD MORREY, B. A., M. D., Professor.

HENRY B. FRONING, Instructor.

Botany.

JOHN H. SCHAFFNER, M. S., Professor.

ALFRED PAUL DACHNOWSKI, Ph. D., Assistant Professor.

ROBERT FISKE GRIGGS, Ph. D., Assistant Professor.

Chemistry.

WILLIAM MCPHERSON, Ph. D., Professor.

WILLIAM LLOYD EVANS, Ph. D., Professor.

JAMES RENWICK WITHROW, Ph. D., Professor.

CHARLES WILLIAM FOULK, B. A., Professor.

Geology.

CHARLES SMITH PROSSER, Ph. D., Professor.

JOHN ADAMS BOWNOCKER, D. Sc., Professor.

THOMAS MCDUGALL HILLS, Ph. D., Assistant Professor.

Veterinary Medicine.

DAVID STUART WHITE, D. V. S., Professor.

SEPTIMUS SISSON, S. B., Professor.

FONSA ALLEN LAMBERT, D. V. M., Assistant Professor.

Zoology.

HERBERT OSBORN, M. Sc., Professor.

FRANCIS LEROY LANDACRE, B. A., Professor.

JAMES STEWART HINE, B. Sc., Associate Professor.

WILLIAM BARROWS, B. Sc., Assistant Professor.

Mathematics.

ROSSER DANIEL BOHANNAN, B. Sc., C. E., E. M., Professor.

KARL DALE SWARTZEL, M. Sc., Professor.

CHARLES LINCOLN ARNOLD, M. Sc., Associate Professor.

Physics.

ALFRED D. COLE, M. A., Professor.

ROBERT F. EARHART, Ph. D., Professor.

HERMAN GUSTAVUS HEIL, Ph. B., Instructor.

DEPARTMENTS REPRESENTING OTHER REQUIRED WORK OF THE COLLEGE

American History.

GEORGE WELLS KNIGHT, Ph. D., Professor.
HOMER C. HOCKETT, B. L., Professor.

Art.

MARGARET FINNEY DACHNOWSKI, Instructor.
ALICE ROBINSON, Instructor.
MARY LOUISE SHEPHERD, Instructor.

Civil Engineering.

CHRISTOPHER ELIAS SHERMAN, C. E., Professor.
R. K. SCHLAFLY, C. E., Assistant Professor.
EARL W. MCCOY, C. E., Assistant.

Economics and Sociology.

JAMES E. HAGERTY, Ph. D., Professor.
MATTHEW BROWN HAMMOND, Ph. D., Professor.
FAYETTE AVERY MCKENZIE, Ph. D., Professor.
CHARLES CLIFFORD HUNTINGTON, M. A., Professor.

English.

JOSEPH VILLIERS DENNEY, M. A., Professor.
GEORGE H. MCKNIGHT, Ph. D., Professor.
WILLIAM LUCIUS GRAVES, M. A., Professor.
EDWIN L. BECK, M. A., Assistant Professor.

Engineering Drawing.

THOMAS EWING FRENCH, M. E., Professor.
ROBERT MEIKLEJOHN, M. E., Assistant Professor.
CREE SHEETS, C. E., (Arch.), Instructor.
ARTHUR C. HARPER, C. E., (Arch.), Instructor.

German.

M. BLAKEMORE EVANS, Ph. D., Professor.
BERTHOLD AUGUST EISENLOHR, M. A., Professor.

LUDWIG LEWISOHN, M. A., Assistant Professor.

MAY THOMAS, Ph. D., Assistant Professor.

Industrial Arts.

FRANK EDWIN SANBORN, S. B., Professor.

CLEMENT C. BEEM, Instructor.

JACOB FOUST, Assistant.

Romance Languages.

BENJAMIN LESTER BOWEN, Ph. D., Professor.

CHARLES A. BRUCE, B. A., Professor.

EDGAR SHUGERT INGRAHAM, Ph. D., Professor.

Architecture.

JOSEPH NELSON BRADFORD, M. E., Professor.

CHARLES ST. JOHN CHUBB, C. E., Professor.

Library.

OLIVE JONES, B. A., Librarian.

Military Science.

CAPTAIN GEORGE L. CONVERSE, U. S. A. (Ret.), Professor.

Physical Education.

H. SHINDLE WINGERT, M. D., Professor.

ALICE LITTLEJOHN GOETZ, M. D., Associate Professor.

ADMISSION

Applicants for admission must be at least sixteen years of age. The College is open on equal terms to both sexes.

UNIVERSITY ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus.

ADMISSION TO THE COURSES LEADING TO A DEGREE

There are two modes of admission to the courses leading to a degree: (a) by examination, (b) by certificate.

ADMISSION BY EXAMINATION

The Entrance Board will conduct entrance examinations June 9 to 13, and September 8 to 12, 1914. A part of the examinations may be taken in June and the remainder in September. All applicants for admission who cannot conform to the requirements for admission by certificate must take examinations for admission.

Schedule—Examinations will be from 8 to 12 a. m. and from 1 to 5 p. m. Students intending to take any of the examinations scheduled in any given half day must appear within one hour after the examination has begun. Students applying for examination will first go to the office of the Entrance Board, Room 100, University Hall, for registration.

Tuesday,	A. M.	History: Ancient and Medieval (to 814 A. D.), Medieval and Modern (after 814 A. D.), English.
Tuesday,	P. M.	English Composition and Rhetoric, English Classics, Chemistry.
Wednesday,	A. M.	Algebra, Physical Geography, Greek.
Wednesday,	P. M.	Plane Geometry, German, Spanish.
Thursday,	A. M.	Civil Government, Solid Geometry, Zoology.
Thursday,	P. M.	Beginning Latin and Cæsar, Elements of Agri- culture, Trigonometry, Com- mercial Geography.
Friday,	A. M.	Physics, Physiology, Botany.
Friday,	P. M.	American History, French, English Literature.
Saturday,	A. M.	Vergil, Cicero, Domestic Science.

REQUIREMENTS BY UNITS

A unit is the equivalent of a course of study covering a school year, during which not less than one hundred and twenty clock-hours are spent in the class-room work on the study. To obtain full standing applicants under twenty-one years of age must have credit by examination or certificate for fifteen units, of which two shall be English; two, foreign language (in Home Economics three units of English and four foreign language); two Mathematics; one, History; and one, Physics.

TOPICS FOR EXAMINATION

English.....I, 2, 3, or 4 units
(Foreign students may substitute their native language
for the English requirement.)

A special bulletin of entrance information will be mailed on request.
Address the University Editor

American History or American History and Civil Government	1	unit
Ancient History (Greek and Roman) and Medieval History to 814 A. D.....	1	unit
Medieval and Modern History (from 814 A. D. to the present) (For the present General History may be counted as a unit, but not in addition to Ancient or Medieval and Modern History.)	1	unit
English History.....	$\frac{1}{2}$ or 1	unit
Algebra (through quadratics).....	1	unit
Algebra (beyond quadratics).....	$\frac{1}{2}$	unit
Geometry (plane).....	1	unit
Geometry (solid).....	$\frac{1}{2}$	unit
Trigonometry.....	$\frac{1}{2}$	unit
Latin.....	1, 2, 3, or 4	units
Greek.....	1, 2, or 3	units
German.....	1, 2, 3, or 4	units
French.....	1, 2, 3, or 4	units
Spanish.....	1, 2, 3, or 4	units
Physics.....	1	unit
Chemistry.....	1	unit
Physical Geography.....	$\frac{1}{2}$ or 1	unit
Zoology.....	$\frac{1}{2}$ or 1	unit
Botany.....	$\frac{1}{2}$ or 1	unit
Geology.....	$\frac{1}{2}$ or 1	unit
Astronomy.....	$\frac{1}{2}$ or 1	unit
Agriculture.....	$\frac{1}{2}$ or 1	unit
Physiology.....	$\frac{1}{2}$	unit
Manual Training	} The Entrance Board may, after investigating each claim, grant a total credit of not to ex- ceed.....	4 units
Free-hand Drawing		
Domestic Science		
Commercial Subjects		
*Farm Experience.....		2 units

A study listed as a half unit will be counted merely as such even if the course has extended for more than a half year. A study listed as one-half or one unit will be given either rating, depending upon the length of the course. A study listed as one unit, no credit will be given for less than a year's work.

No student under twenty-one years of age will be admitted to college if he is conditioned in more than two units. All entrance conditions must be removed within two years after admission.

*Credit for Farm Experience will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

Students over twenty-one years of age, after obtaining credit for elementary or "grade" work, and for such other subjects as may be necessary to qualify them for the classes that they wish to enter may, on the presentation of satisfactory reasons, be admitted, by the joint action of the Entrance Board and the Executive Committee of the College, to any class in the College, provided that if any student who has been admitted on these conditions afterwards becomes a candidate for a degree, he shall take the omitted entrance examination at least one academic year before the degree is conferred.

ADMISSION BY CERTIFICATE

Applicants may be admitted to the four-year course in Agriculture and to the four-year courses in Horticulture and Forestry without examination on presentation of properly endorsed certificates from any first or second grade high school in this state, or from approved normal schools, or from the State Board of School Examiners, or from any school outside of the state which is recognized by the University, under the following provisions:

(a) If from secondary schools, the certificate must show that the applicant is a graduate in good standing of the school issuing it; and also must state in detail the studies pursued, the text-books used, the amount of work done in each study, the amount of time devoted to it, and the fact that the applicant has passed in the work.

(b) Any entrance requirement not covered by a certificate must be met by examination.

Blank certificates may be obtained by addressing the Secretary of the Entrance Board. Certificates should be filled out and returned to the University by the proper school official as early as possible after the close of schools in June.

Applicants to be admitted to the course in Home Economics without examination must present properly endorsed certificates from such secondary schools as have been accredited or recognized by the University, or from approved normal schools, or from the State Board of School Examiners, subject to the provisions above stated.

REMOVAL OF ENTRANCE CONDITIONS

Entrance conditions may be removed (1) by examination conducted only by the Entrance Board; or (2) by the substitution by the Entrance Board of excess work in other approved subjects; or (3) by the substitution of other work of equivalent amount to be done in

the University; and it shall be the duty of the secretaries in their respective colleges to assign to each student having entrance conditions outstanding at the end of the Freshman year such college courses for the following years as may be deemed a fair equivalent for the work in which the student has entrance conditions. But a student who is taking or has completed a collegiate course is not eligible for entrance examinations upon the same topic, unless it is a fixed requirement in the college in which he is registered. (Faculty Rule 97.)

ADMISSION WITH ADVANCED STANDING

Applicants who have completed at least one year's work in an approved college, and who bring official and explicit certificates describing their courses of study and scholarship and letters of honorable dismissal, will be admitted in accordance with either of two plans:

(1) The entrance units on which the candidate was admitted to the approved college will be accepted at their face value; deficiencies will be made up from the college credits presented, and advanced credit will be given for any remaining satisfactory work; or

(2) One year's work will be accepted in lieu of entrance units and the candidates will be admitted without examination and without conditions, but without any advanced standing on the year's work.

Applicants who have completed less than one year's work in an approved college will be given credit for satisfactory work provided they can meet regular entrance requirements.

REQUIREMENTS FOR SHORT COURSES

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the Principal or Superintendent of the school last attended, recommending him to the University.

COURSES OF STUDY

AGRICULTURE

The course in Agriculture is one of a number of regular four-year collegiate courses in the University. It is designed not only to make specially trained agriculturists, but also educated men. The course presupposes that a young man has had a high-school training, or its equivalent, and that he has had the training in farm matters that usually comes to a young man who has lived on a farm. It supplements this training, but does not repeat it. The technical training in this course consists of those matters which years of experience in teaching have shown are either lacking or most necessary. Young men from the cities are entering this course, as they should do if they expect to engage in agricultural pursuits, but it should be understood that the course in Agriculture does not, except incidentally, supply that training in farm matters which comes from actual life upon the farm.

The officers of the College recognize the danger of a too special or technical training of under-graduate students in a subject having such a wide scope, and one requiring for its successful prosecution such breadth of knowledge as agriculture. A careful examination of the course as outlined will show that about one-third of the time of the student during the four years is, or may be, devoted to language (English and foreign), history, and economics, about one-third to pure science, and one-third to technical or professional training. Electives in the junior and senior years allow the student, if he chooses, to specialize in animal husbandry, agronomy, dairying, rural economics, agricultural chemistry, bacteriology, botany, or entomology.

COURSE IN AGRICULTURE

Degree—Bachelor of Science in Agriculture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR

FIRST SEMESTER

SECOND SEMESTER

Chemistry (105 or 109)	4	Chemistry (106 or 110)	4
Inorganic.		Qualitative.	
Zoology (101)	3	Zoology (102)	3
Invertebrate.		Vertebrate.	
English (101)	2	English (104)	2
Paragraph Writing.		Brief Making.	
Animal Husbandry (101)	4	Animal Husbandry (102)	4
Cattle and Sheep.		Horses and Swine.	
Drawing (125)	2	Geology (152)	3
Shopwork (101)	2	Shopwork (104)	2
Cadet Service	1	Cadet Service	1
Gymnasium	1	Gymnasium	1

SECOND YEAR

Geology (153)	3	Agronomy (104)	4
Agricultural Chem. (103)	5	Agricultural Chem. (104)	5
Botany (101)	4	Botany (102)	4
Physiology (101)	3	Physiology (102)	3
Zoology (107)	3	Zoology (108)	3
Entomology.		Entomology.	
Bibliography (103)	1/2		
Cadet Service	1	Cadet Service	1

THIRD YEAR

Agronomy (106)	4	Agronomy (101)	4
Dairying (101)	4	Horticulture (118)	4
Modern Language	4	Modern Language	4
French, German, or Spanish.		French, German, or Spanish.	
Meteorology (101)	2		

And one of the following:

Animal Husbandry (103)	4	Animal Husbandry (104)	4
Veterinary Medicine (151)	3	Veterinary Medicine (152)	3
Forestry (*)	4	Dairying (102)	4
Zoology (113)	4	Zoology (114)	4
Entomology.		Entomology.	
Bacteriology (107)	4	Bacteriology (110 or 112)	4
Agricultural Chem. (*)	4	Agricultural Chem. (*)	4
Botany (*)	3 or 4	Botany (*)	3 or 4
Agronomy (107)	4	Agronomy (102)	3
Animal Husbandry (105)	3	Animal Husbandry (106)	4
		Meteorology (102)	2

FOURTH YEAR

American History (101) or		American History (102) or	
Economics (135)	3	Economics (136)	3
Rural Economics (103)	4	Rural Economics (104)	3
Farm Management.		Agricultural Economics.	

*Students electing Agricultural Chemistry, Botany, or Forestry in their junior year should consult the department interested regarding the same before being registered.

~~Meats and meat prod (110)~~
~~Breeds of horses and Sheep (108)~~
~~Breeds of cattle and swine (104)~~ } 99/104/110/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1223/1224/1225/1226/1227/1228/1229/1230/1231/1232/1233/1234/1235/1236/1237/1238/1239/1240/1241/1242/1243/1244/1245/1246/1247/1248/1249/1250/1251/1252/1253/1254/1255/1256/1257/1258/1259/1260/1261/1262/1263/1264/1265/1266/1267/1268/1269/1270/1271/1272/1273/1274/1275/1276/1277/1278/1279/1280/1281/1282/1283/1284/1285/1286/1287/1288/1289/1290/1291/1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292/2293/2294

Elective

Ten hours a week throughout the year from any of the courses given in any of the colleges of the University upon which the student is qualified to enter, except the College of Law. Two hours a week of this elective work may be devoted to a thesis, subject to the consent of the instructor under whom the thesis is to be written.

HORTICULTURE

This course was established to meet a growing demand for special education and training in the College of Agriculture. It seeks to familiarize the student with those sciences that are fundamental in horticulture and to give a certain amount of technical and literary training.

Among the sciences that form the natural basis of a sound, practical knowledge of horticulture are chemistry, physics, botany, geology, zoology, and entomology. To these a large part of the first two years of the course is devoted. In addition, one modern language, rhetoric or English composition, drawing, and shop work are required.

The last two years of the course are devoted mainly to horticulture proper, with some more strictly cultural studies like history or economics. A third part of the required work of the fourth year is elective, and may be chosen from any course in the University upon which the student is qualified to enter.

The primary object of the course is to teach those who desire to become fruit-growers, gardeners, nurserymen, florists, or landscape gardeners, what they most need to know as a foundation for their professional work. To this end both the science and art, or the theory and practise, are taught. While the sciences are invaluable in giving accurate and definite knowledge regarding the origin and growth of plants, and the composition and physical properties of the soil, they cannot tell us just how to select varieties, or how to propagate, transplant, cultivate, fertilize, prune, spray, or what is equally essential in practise, how to harvest, store, and market the product to the best advantage.

For earnest, enterprising young men and women, horticulture, in its various branches, offers as large a reward for intelligent, well-directed effort as any other pursuit or profession.

COURSE IN HORTICULTURE

Degree—Bachelor of Science in Horticulture

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the departments of instruction.

FIRST YEAR.**FIRST SEMESTER**

Chemistry (105 or 109)	4
Inorganic.	
Zoology (101)	3
Invertebrate.	
English (101)	2
Paragraph Writing.	
Horticulture (101)	4
Principles.	
Drawing (125)	2
Shopwork (101)	2
Cadet Service	1
Gymnasium	1

SECOND SEMESTER

Chemistry (106 or 110)	4
Qualitative.	
Zoology (102)	3
Vertebrate.	
English (104)	2
Brief Making.	
Horticulture (102)	4
Principles.	
Geology (152)	3
Shopwork (104)	2
Cadet Service	1
Gymnasium	1

SECOND YEAR.

Horticulture (103)	4	Horticulture (104)	4
Agricultural Chem. (103)	5	Agricultural Chem. (104)	5
Geology (153)	3	Agronomy (104)	4
Zoology (107)	3	Zoology (108)	3
Economic.		Economic.	
Botany (101)	4	Botany (102)	4
Bibliography (103)	$\frac{1}{2}$		
Cadet Service	1	Cadet Service	1

THIRD YEAR.

Horticulture (105)	4	Horticulture (106)	4
Modern Language	4	Modern Language	4
French, German, or Span-		French, German, or Span-	
ish.		ish.	
Physiology (101)	3	Physiology (102)	3
Botany (125)	4	Botany (126)	4
Meteorology (101)	2	Horticulture (108)	3

FOURTH YEAR.

American History (101) or		American History (102) U. S.	
Economics (135)	3	Political or	
Horticulture (109)	3	Economics (136)	3
Horticulture (107)	3	Horticulture (110)	3
		Botany (116)	3

Elective

Seven hours a week through the year, chosen from any of the courses given in any college of the University upon which the student is qualified to enter, except the College of Law, two hours a week of which may be devoted to thesis, subject to the approval of the department in which the thesis is to be written.

FORESTRY

The main objects in the establishment of a four-year course in Forestry are: (1) To educate and train young men in forestry; (2) To promote forestry in the State of Ohio.

It is the aim of the department to reach two classes of students: first, those who purpose to make forestry their life work; second, those who, while specializing in other courses, desire to acquaint themselves with the elements or with certain phases of the general subject.

The regular course seeks to prepare the students not only for practical work in the woods, but for national and state service in various lines, for consultation work for lumbermen, railroad companies, water-works, park commissions, and private owners.

To those who enjoy outdoor life, and are willing to undergo vigorous tests of mental and physical strength, forestry presents an especially inviting field. The remuneration compares favorably with that of other salaried professions, and the opportunities for private enterprise are wide and varied.

The art of forestry has made such progress in our country, that it is sometimes advisable to specialize in certain well-defined branches of the subject.

Opportunity for special work, in addition to what is included in the regular course, is offered in silviculture, forest management, and arboriculture.

The facilities for becoming well grounded in the fundamental and accessory studies are provided in the various departments of the University. Language, mathematics, physics, chemistry, engineering, botany, geology, entomology, soil physics, American history, etc., form a large part of the work of the first two years of the course, while the last two years are devoted to the more technical subjects.

Facilities for original and research work in scientific forestry are found in the various scientific and engineering laboratories of the University.

COURSE IN FORESTRY

Degree—Bachelor of Science in Forestry

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding numbers under the departments of instruction.

FIRST YEAR**FIRST SEMESTER**

Chemistry (105 or 109)	4
Mathematics (121)	3
Modern Language (101)	4
French, German, or Spanish.	
English (101)	2
Engineering Drawing (123)	2
Forestry (101)	2
Introduction.	
Cadet Service	1
Gymnasium	1

SECOND SEMESTER

Chemistry (106 or 110)	4
Physics (108)	3
Modern Language (102)	4
French, German, or Spanish.	
English (104)	2
Forestry (102)	2
Silvics.	
Botany (110)	2
Dendrology.	
Cadet Service	1
Gymnasium.	1

SECOND YEAR

Botany (101)	4
Zoology (109)	3
Entomology.	
Modern Language (103)	4
French, German, or Spanish.	
Civil Engineering (121)	6
Surveying.	
Forestry (103)	2
History and Relations.	
Cadet Service	1

Botany (102)	4
Zoology (110)	3
Entomology.	
Modern Language (104)	4
French, German, or Spanish.	
Geology (152)	3
Forestry (104)	3
Arboriculture.	
Cadet Service	1

THIRD YEAR

Forestry (105)	3
Silviculture.	
Botany (125)	4
Physiological Ecology.	
Agronomy (123)	2
Forest Soils.	
Forestry (111)	2
Protection.	
Forestry 107	4
Mensuration.	

Forestry (106)	3
Silviculture.	
Botany (126)	4
Physiological Ecology.	
Botany (142)	2
Dendrology.	
Forestry (112)	2
Forest Craft.	
American History (126)	3

Not less than four hours throughout the year from the following:

*American History (101)	3
Agricultural Chem. (103)	5
Zoology (113)	4
Engineering Drawing (137)	2
Economics (135)	3
Horticulture (107)	3
Meteorology (107)	2

*American History (102)	3
Agricultural Chem. (104)	5
Zoology (114)	4
Engineering Drawing (138)	2
Economics (136)	3
Horticulture (108)	3
Botany (113)	3

*American history is required of all students who did not have a satisfactory high school course in that subject.

FOURTH YEAR

Chemistry (127)	4	Forestry (108)	4
Organic.		Utilization, Lumbering.	
Forestry (109)	4	Forestry (116)	4
Management.		Forestry Products.	
Botany (117)	4	Botany (118)	4
Forest Botany.		Forest Botany.	
Forestry (113)	2	Forestry (114)	2
Economics.		Forest Policy.	
Forestry (117)	1	Forestry (118)	1
Seminar.		Seminar.	

Not less than three hours throughout the year from any of the courses given in any college of the University upon which the student is qualified to enter.

Unless the candidate for a degree has had a full equivalent, not less than one summer of practical work in the woods is required before graduation.

SHORT COURSES

These courses continuing three years will be offered for the first time at this University in October, 1914. There will be two of them—Agriculture and Horticulture—and they will replace the two-year courses that have been given for several years. They will constitute a radical departure from the latter courses in that they will begin the middle of October and end the middle of March. The Christmas vacation will divide the courses into two terms of ten weeks each. Practically the same subjects for study will be given as were used in the two-year courses, and the same general scope of Agriculture and Horticulture will be covered in three years that has been covered heretofore in two years. It will be possible, however, to give more instruction in English.

One of the chief advantages that will arise from this new plan will be the larger opportunity that will be afforded farm boys to arrange their work so that they can come to the University. The period from March 15 to October 15 covers, in the main, the planting and harvesting seasons on the farm, and the period from October 15 to March 15, covered by the courses of study, can be spent at the University without special interference with the work on the farm. The need of such an arrangement correlating the school work with the farm work has been felt for some time, and it is believed that its advantages will be recognized by many young men who have been unable to leave their farms for the longer period from September to June.

Outlines of the two courses follow.

SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM

Agr. Chemistry (51)	4
Agronomy (51)	4
Animal Husbandry (51)	4
Agr. Engineering (51)	4
English	3

SECOND TERM

Agr. Chemistry (52)	4
Agronomy (52)	4
Animal Husbandry (52)	4
Dairying (52)	3
English	3

SECOND YEAR

Horticulture (53)	4
Agronomy (53)	4
Agr. Chemistry (53)	4
Dairying (53)	3
Shopwork (51)	3

Horticulture (54)	4
Agronomy (54)	4
Animal Husbandry (54)	4
Shopwork (52)	3
Agr. Engineering (52)	4

THIRD YEAR

Rural Economics (51)	4
Forestry (51)	4
Animal Husbandry (57)	4

Rural Economics (52)	4
Agr. Engineering (54)	4
Animal Husbandry (58)	4

Choice of two from the group below.

Poultry Husbandry (59)	3
Veterinary Medicine (51)	3
Horticulture (55)	4
Bacteriology (51)	4
Agr. Engineering (53)	4
Animal Husbandry (53)	4
Horticulture (57)	4
Plant Pathology (53)	4
Rural Economics (53)	4

Poultry Husbandry (60)	3
Veterinary Medicine (52)	3
Horticulture (56)	4
Entomology (52)	4
Dairying (56)	4
Horticulture (58)	4
Horticulture (60)	4
Animal Husbandry (55)	4
Rural Economics (54)	4

SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agr. Chemistry (51)	4	Agr. Chemistry (52)	4
Horticulture (51)	4	Horticulture (52)	4
Animal Husb. (53)	4	Dairying (52)	3
Horticulture (53)	4	Horticulture (54)	4
English	3	English	3

SECOND YEAR

Agronomy (53)	4	Agronomy (54)	4
Shop (51)	3	Shop (52)	3
Horticulture (55)	4	Horticulture (56)	4
Agr. Engineering (53)	4	Agr. Engineering (54)	4
Elective	3-4	Elective	3-4

THIRD YEAR

Horticulture (57)	4	Horticulture (58)	4
Forestry (51)	4	Horticulture (60)	4
Rural Economics (51)	4	Rural Economics (52)	4
Elective	7-8	Elective	7-8

Electives

Poultry Husb. (59)	3	Poultry Husb. (60)	3
Dairying (53)	3	Dairying (56)	3
Bacteriology (51)	4	Entomology (54)	4
Animal Husb. (51)	4	Animal Husb. (52)	4
Horticulture (65)	4	Horticulture (66)	4
Horticulture (59)	4	Horticulture (62)	4
		Horticulture (64)	4

APPRENTICE'S TWO-YEAR COURSE IN ANIMAL HUSBANDRY

This is essentially a short course in Agriculture, but is especially arranged for students who wish to specialize in Animal Husbandry work. The course includes two years at the University and two years on stock farms. Through arrangement with the Department, specially qualified men may take this course. They will spend the first year at the University; the second will be devoted to practical training on stock farms by arrangement of the Department, pay being given for the service; the third year will be at the University; and the fourth year on other stock farms. Some of the leading stockmen of Ohio and other States have agreed to co-operate in arranging this course.

Not over 50 matriculants will be permitted to enroll, and each person must receive the written authority of the Animal Husbandry Department before being registered. No changes or substitutions will be permitted, and each person taking the work must agree to take the practical farm work as given in the course.

OUTLINE OF THE COURSE

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR

FIRST SEMESTER		SECOND SEMESTER	
Types and Market Classes (101)	4	Types and Market Classes (102)	4
Cattle and sheep.		Horses and Swine.	
Animal Husbandry (125)	3	Animal Husbandry (128)	3
Feeding Animals.		Breeding Animals.	
Agronomy (103)	4	Agronomy (108)	4
Chemistry (101)	4	Agricultural Chem. (102)	4
Shopwork (101)	2	Shopwork (104)	2
Cadet Service	1	Cadet Service	1
Gymnasium	1	Gymnasium	1

SECOND YEAR

At least 300 days' service on an accredited stock farm, the student to be placed thereon by arrangement with the Department of Animal Husbandry.

THIRD YEAR

FIRST SEMESTER		SECOND SEMESTER	
Animal Husbandry (129)	4	Animal Husbandry (130)	4
Poultry Husbandry	2	Meats and Meat Products	
Zoology (109)	4	(110)	1
Veterinary Medicine (151)	3	Veterinary Medicine (152)	3
Physiology (103)	3	Bacteriology (104)	3
Rural Economics (101)	2	Botany (112)	4
		Agricultural Economics	3

FOURTH YEAR

At least 300 days' service as during the second year, though on a different farm or farms from that year, will be required. At end of fourth year, with a satisfactory record, the student will be granted an Apprentice's Certificate in Animal Husbandry.

COMBINATION COURSES

The term Combination Course, as applied to a course of study in this College, refers to the combination Arts-Agriculture course recently adopted by the Ohio State University. This course, continuing five years, is co-operative between the University and other colleges of the State, and becomes effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the co-operating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done *in absentia*, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science in Agriculture, B. Sc. (Agr.), from this University.

These courses have been established for students who desire more Arts College (cultural) work than can be given in a technical course and more technical work than can be given in an Arts College course.

An increasing number of students are entering the College of Agriculture with advanced standing from the other colleges of the state each year. Such an arrangement as this combination course affords would allow students to get their general training at their home institution and would require them to be enrolled in the State University only two years. It would also give them a degree from their local school and thus preserve their affiliation with that institution. Such a combination of courses will result in a material saving of time and expense to students who want to take the work of both colleges.

Tentative plans have been made with several colleges of the State, notably, University of Akron, Akron; Capital University, Columbus; Antioch College, Yellow Springs; and Baldwin-Wallace College, Berea; and it is the desire of The Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

WINTER COURSES

The Ohio Dairy School

This course in Dairying, beginning the first Monday in January, is established to meet the wants of those who have neither the time nor means for the more extended courses. It is designed especially for those who are desirous of mastering the art of butter and cheese making or who wish to become fitted for the position of manager or superintendent of a creamery or cheese factory. In this course the greater part of the time is given to laboratory or dairy room practise. This consists in the testing of milk as to purity and content of butter fat; the use and care of centrifugal separators and other dairy devices; the making of butter and cheese by the most improved methods; in short, all the essential operations of the creamery, factory, and home dairy management are repeatedly performed under the guidance and direction of competent instructors. A special bulletin describing this course will be mailed, upon application, to any one interested.

Winter Course in Agriculture

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are able to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practises.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

Winter Course in Poultry Husbandry

An eight-week course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

Those who are interested are invited to write for the special announcement describing these courses.

HOME ECONOMICS

The course in Home Economics is planned to meet the special needs of women students. Four years of regular university work are required. The department of Home Economics stands for a liberal training of a university grade, which gives a homeward trend to the education of young women.

The course is essentially scientific in character, but a fair amount of literary, artistic, and economic training is provided. Certain courses offered in this department are elective for students who specialize along other lines of work. The prescribed course affords opportunity for a student to specialize in home economics, and elective courses in addition to this provide training for those who wish to teach the subject. Students desiring to enter this course will be required to present fifteen units entrance credits.

OUTLINE OF THE COURSE

Degree—Bachelor of Science in Home Economics

Note.—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of courses, see corresponding number under the departments of instruction.

FIRST YEAR**FIRST SEMESTER**

Chemistry (105 or 109)	4
Art (101)	2
English (101)	2
Zoology (101) or	
Botany (101)	3 or 4
Modern Language (101)	4
French or German.	
Home Economics (111)	2
Textiles.	
Physical Training	1

SECOND SEMESTER

Chemistry (106 or 110)	4
Art (102)	2
English (102)	2
Zoology (102) or	
Botany (102)	3 or 4
Modern Language (102)	4
French or German.	
Home Economics (112)	2
Textiles.	
Physical Training	

SECOND YEAR

Chemistry (127)	4	Agricultural Chem. (123)	5
Organic.		Home Economics (102)	5
Home Economics (101)	5	Physiology (102)	3
Physiology (101)	3	Modern Language (104)	4
Modern Language (103)	4	French or German.	
French or German.		Engineering Draw. (128)	1½
Engineering Draw. (127)	1½	Physical Training	1
Bibliography (103)	½		
Physical Training	1		

THIRD YEAR

Economics (135)	3	Economics (136)	3
Bacteriology (107)	4	Home Economics (104)	3
Agricultural Chem. (124)	4 or 5	Home Economics (110)	4
Art (105)	2	Home Economics (118)	3

Electives to make fifteen hours.

FOURTH YEAR

Sociology (101)	3	Sociology (102)	3
Home Economics (105)	2	Home Economics (106)	3 to 5
Home Economics (117)	3		

Electives to make fifteen hours. Elective courses offered in the Department:-

Home Economics (113)	3	Home Economics (116)	3
Home Economics (108)	2	Home Economics (109)	2

Electives for the course must include not less than three hours of English through the year, and, for students not offering entrance credit in American History, three hours of American History through the year.

Note.—Students in the College of Agriculture may elect the courses in Biblical Literature and Historical Christianity, taught by Miss Breyfogle.

GRADUATE WORK IN COLLEGE OF AGRICULTURE

Graduate work in the College of Agriculture is particularly planned for those persons who expect to enter College or Experiment Station work, or the Government Bureaus relating to Agriculture.

It is recognized that the scientific advance in agriculture requires men who are conversant with practical agriculture and the related sciences, and who are also prepared to do research work and to put into good pedagogic form the results of recent investigation.

Equipment

The University has especially good facilities for advanced work. Intensified agriculture and horticulture throughout the State, and especially in the territory surrounding Columbus, give students unusual opportunity to observe the practical application of science in farming.

The laboratories, a farm of over four hundred acres, the various breeds of farm animals kept on the farm, as well as the numerous excellent herds and flocks available in the vicinity, give ample facilities for studying problems in these lines in technical agriculture.

The various orchards and small fruit plantations belonging to the University and accessible within the State show a wide range of methods and the development of a specialized culture.

The instructors in the scientific departments of the University are heartily in sympathy with agricultural work, and take great interest in scientific problems of immediate value to agriculture that students take up in the laboratories of these departments. The laboratories in the department of science most intimately connected with work in agriculture and horticulture are provided with extensive collections and apparatus giving excellent opportunity for the investigation of special problems.

Graduate School

All graduate work in the University is now given in the Graduate School of the University. The various departments listed in this bulletin offer graduate work in a number of lines. For full particulars regarding the graduate courses, requirements for degrees, etc., see the bulletin of the Graduate School.

Departments Offering Graduate Work

The lines in which the various departments are best prepared to offer graduate work are as follows:

Agricultural Chemistry

Major graduate work may be taken along the lines of food inspection and analysis, human nutrition, animal nutrition, dairy chemistry, or soil chemistry.

Agronomy

The graduate courses offered by the Department of Agronomy cover three fields of investigation:

- (1) Crops.
- (2) Soils.
- (3) Agricultural Engineering.

Two special graduate courses in crops are provided, one of which is designed to cover investigations in general crop production and the other to cover plant breeding investigations and other subjects directly related to crop improvement.

The graduate course in soils will include the preparation of monographs on the following topics:

- (1) Soil surveying and mapping.
- (2) The relation of soil types to crop production.
- (3) The influence of certain physical properties upon productive capacity.

Animal Husbandry

Special facilities are available for students who wish to take major work in Animal Husbandry. Each of the members of the department has a special line of research in which students may work or they may be directed in the investigation of any topics selected.

The topics named below can be taken up with particular advantages at this institution:

- (a) Phases of the breeding or the management of dairy cattle.
- (b) Wools and other animal fibres.
- (c) Inheritance in farm animals.
- (d) The breeds of horses.
- (e) Live stock registration.
- (f) Breed history and development.
- (g) Live stock judging.

Work along any one of the above lines can be arranged for minor credit as well as for major.

Bacteriology

The courses offered in the Department of Bacteriology of special importance to graduate students in the College of Agriculture are as follows:

- (a) Advanced soil bacteriology, including studies on the bacterial diseases of soils.
- (b) Advanced dairy bacteriology, including studies on the handling of the various dairy products and their preparation.
- (c) Water bacteriology, dealing with the methods of examination and studies on the various methods of filtration.
- (d) Bacteriological chemistry; principally enzyme work.
- (e) Pathogenic bacteriology, with special reference to the disease bacteria in the soil.

Botany

Courses are offered by the Department along several lines of especial importance to agricultural students. These courses cover four fields of investigation as follows: (1) Plant cytology, including problems of heredity and special studies on chromosomes; (2) plant physiology, emphasis being placed upon the relation of the plant to the soil, together with a study of soil diseases; (3) mycology, including fungous diseases of cultivated plants; (4) systematic botany, with studies on various groups, as grasses, trees, etc.

Dairying

Students desiring graduate work in the Department of Dairying can arrange for work along any of the following lines:

- (a) Formulating rations for the economical production of milk and butter fat.
- (b) The production of sanitary milk in an economical manner.
- (c) The manufacture of butter, especially with reference to increased keeping quality.
- (d) The manufacture of a variety of cheeses.
- (e) Milk condensation.
- (f) The manufacture of fermented milk.
- (g) The manufacture of ice cream.

Geology

The Department of Geology offers work open to graduate students of the College of Agriculture along four distinct lines, viz:

- (1) Stratigraphic geology with trips for the field study of Ohio formations supplemented by laboratory study of specimens and literature (Course 105).
- (2) Paleontology, which includes identification and description of the fossils of the Ohio and related formations (Courses 107-108).
- (3) Economic geology describing the metallic ores and the non-metals of the United States (Course 167).

(4) Glacial geology in which the glacial deposits of North America are described, with field trips for the study of those found in Ohio (Course 106). Courses 105 and 106 constitute a year's work and are of particular importance in understanding the origin of the soils of Ohio.

Rural Economics

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and in agricultural economics.

Zoology and Entomology

The graduate work provided in this department covers especially the courses in Entomology, and in this subject it is possible for students to prepare themselves thoroughly for professional work either in teaching, experiment station work, or for government positions. Many of the graduates of this College are now occupying such positions in many different states, and in the government service. The courses available are Advanced Entomology Nos. 113 and 114, in case this has not been taken as an undergraduate course, and if it has been taken, it may be followed by special research course Nos. 141 and 142, consisting of research work on entomological problems. The graduate course in Invertebrate Zoology 247-248, is also available for more thoro preparation upon invertebrates in general.

For graduate students in Animal Husbandry, this department offers a course in quantitative studies in Variation, Heredity, and Animal Behavior, Nos. 129 and 130. In all these courses the equipment is sufficient to enable the student to do work of an individual and distinctly advanced character.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY

Townshend Hall

PROFESSOR VIVIAN, ASSOCIATE PROFESSOR LYMAN, MR. PHILLIPS,
AND ASSISTANTS

The Department of Agricultural Chemistry occupies the second floor of Townshend Hall. Each desk contains a complete outfit of apparatus and chemicals necessary for the work in hand. Special apparatus and chemicals are supplied from the store room. Each desk is equipped with gas and water. Hoods for evaporation and generation of noxious gases and liquids are conveniently arranged on both sides and one end of the laboratory.

For Undergraduates

103-104. General Agricultural Chemistry. Five credit hours. The year. Four-year courses in Agriculture, Horticulture, and Forestry. Prerequisite, Chemistry 106 or 110. Mr. Vivian, Mr. Phillips, and assistants.

Three lectures and two laboratory periods weekly. Lectures on chemistry as applied to agriculture, including the following topics: Food requirements of plants, sources of plant food, soil exhaustion and amelioration, barnyard manure and commercial fertilizers, composition of feeding stuffs and dairy products. Laboratory work consists of a brief introduction to quantitative analysis, gravimetric and volumetric, followed by the analysis of fertilizers, feeding stuffs, and dairy products.

105-106. Advanced Agricultural Analysis. Five credit hours. The year. Prerequisite, Course 103-104. Mr. Vivian, Mr. Phillips.

The work of this course consists of a detailed study of the official methods of determining nitrogen, potash, phosphoric acid; the complete analysis of grains and feeding stuffs, milk, butter, and cheese. Intended for students desiring to specialize in agricultural chemistry.

113. Chemistry of Insecticides and Fungicides. Two credit hours. First semester. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

Lectures and recitations on the materials used as insecticides and fungicides; their preparation and properties.

123-124. Home Economics Chemistry. Four or five credit hours. The year. Course in Home Economics. Prerequisite, Chemistry 106 or 110. Mr. Lyman, Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

For Advanced Undergraduates and Graduates

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, Course 103-104. Mr. Vivian.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practise on the complete analysis of milk, butter, and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

109-110. Chemistry of Soils. Three to five credit hours. The year. For students specializing in agronomy. Prerequisite, Course 103-104. Mr. Vivian.

Lectures and laboratory work on the chemical composition of the soil, using the official method of analysis of soils, and the various methods suggested by the U. S. Department of Agriculture; testing needs of soil for application of commercial fertilizers.

111-112. Chemistry of Animal Nutrition. Three to five credit hours. The year. Prerequisites, Course 103-104 or equivalent. Mr. Vivian.

For students specializing in animal husbandry.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Course 103-104 or an equivalent preparation in quantitative analysis. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practise embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled

beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, General and Organic Chemistry. Mr. Lyman.

A study of food principles, proteins, fats, and carbohydrates. The composition of the various tissues, secretions, and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

For Graduate Students Only

131-132. Research Work. Five to ten credit hours. The year. Mr. Vivian, Mr. Lyman.

(Courses 105 to 112, 121-122, and 125-126 may be taken as graduate work if not previously elected, or continued as special lines of research during a graduate course.)

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four hours. First and second terms. Short Courses in Agriculture and Horticulture.

Lectures, recitations, and demonstrations on chemical elements concerned in plant growth. Ingredients of plants, essential and non-essential; sources of plant food, air, and soil. Nature of soil and plant food; soil exhaustion and amelioration; farm manures sources, composition and preservation; commercial fertilizers, their rational use; lime and other soil amendments.

53. Chemistry of Plants. Four hours. First term. Prerequisite, Course 51 or equivalent.

Composition of plants, ash, protein, fat, carbohydrates, fiber. Changes in plant growth. Factors affecting composition; chemical changes involved in preparation and preservation of foods. Feeding standards and nutritive ratio.

AGRICULTURAL EDUCATION

Office, West Basement, University Hall

ASSISTANT PROFESSOR BRICKER

121-122. The Teaching of Agriculture in the High School.

Two credit hours. The year.

The administrative phases of secondary agriculture, the application of the principles of pedagogy to the teaching of agriculture in the high school, and the organization of agricultural materials into secondary courses of study will constitute the essential features. Intended especially for prospective supervisors and teachers of agriculture in high and normal schools.

127. History of Agricultural Education. Two credit hours.

First semester.

The influence of the industrial revolution and the new methods of production upon the preparation of youth to follow the pursuit of agriculture. The early and modern methods of preparation for farming. The early attempts at education in agriculture in Europe and America. The rise and development of secondary and elementary education in agriculture in the United States.

NOTE.—For other courses in Agricultural Education consult the College of Education bulletin, Department of School Administration.

AGRONOMY

Townshend Hall

PROFESSOR M'CALL, PROFESSOR RAMSOWER, AND ASSISTANT

PROFESSOR LIVINGSTON

The soils laboratory is provided with apparatus for study of the physical properties of soils, including specific gravity, the retention of moisture, the effect of mulches on evaporation, the rate of percolation of water through soils, and the capillary rise of moisture. The laboratory is also provided with a complete centrifugal outfit for the mechanical analysis of soils, and electrical instruments for determining temperature and soluble salt content.

The department also has several drainage levels, six architects' levels, two surveyors' transits for use in laying out drainage systems, surveying fields, etc.

In the study of crops use is made of a large collection of seeds, of dried specimens of grasses, grains, and other crops, and the growing crops on the farm. For the corn judging work, samples are secured of all the chief varieties grown in different sections of the corn belt, and opportunity is offered in the advanced courses to assist in judging at local corn shows. The market grades of grain and hay are studied by means of commercial samples secured from the chief markets. The department is supplied with Brown-Duval testers and ovens for the study of the moisture content of field crops in different stages of curing and under different processes of storage.

The variety test plots include all the principal Ohio varieties of corn, wheat, oats, sorghum, millet, soy beans, and cow peas. The different species of grasses and legumes used for pastures and meadows are all grown side by side, so that a comparative study may be made as to the value of each. Breeding plots of corn, wheat, alfalfa, clover, and timothy are maintained to give opportunity for the study of variation, correlation, selection, and other principles of plant breeding as well as the practical methods of crop improvement.

For Undergraduates

101. Farm Equipment. Four credit hours. Second semester. Prerequisite, Engineering Drawing 125. Mr. Ramsower.

Lectures and recitations on the laying out and equipment of the farm, the planning of the farm buildings, and a detailed study of farm power, water supply, and farm machinery. Practicum in the laying out of farms, the planning of farm buildings, comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

102. Agricultural Engineering. Three credit hours. Second semester. Mr. Ramsower.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size, depth, and distance apart of tile; (c) roads; history of road building, kinds of roads, their construction and cost. Field work in differential leveling, laying out drainage systems, constructing road profile, and obtaining areas by chain and transit.

104. Elementary Soils. Four credit hours. Second semester. Prerequisite, Geology, 165 or 153. Four-year courses in Agriculture and Horticulture. Mr. McCall.

Lecture and recitations on the origin, formation, and kinds of soils, their chemical and physical composition, and improvement by cultivation, fertilization, drainage, and irrigation. Laboratory studies of the physical properties of soils, and the factors which control soil fertility.

106. Field Crop Production. Four credit hours. First semester. Prerequisite, Botany 101 or its equivalent. Mr. Livingston.

A study of the history, adaptation, distribution, and classification of the cereal crops, and the cultivation, harvesting, and marketing of the same throughout the great agricultural sections of the world, with special attention given to Ohio conditions.

109. Seed and Market Grain. Two credit hours. First semester. Prerequisite, Agronomy 106. Mr. Livingston.

Seed selection; corn and small grain judging, and the market grading of grains.

111. Grasses and Forage Crops. Three credit hours. Second semester. Prerequisite, Botany 101 or its equivalent. Mr. Livingston.

The study of the history, distribution, adaptation, characteristics, cultivation, harvesting, and marketing of the principal forage crops, including the grasses and legumes used for pastures and meadows, annual forage crops, soiling, and silo crops. Laboratory work in the study of methods of preparing the seed bed, root systems of forage plants, root nodules and inoculation of legumes, moisture content of forage crops, comparison of silage methods, comparative study of annual forage crops, and seed testing for purity and germination.

***114. Advanced Farm Machinery.** Two credit hours. Second semester. Prerequisite, Agronomy 101. Mr. Ramsower.

A detailed study of the construction of farm machinery. Expert work in assembling and testing grain binders, corn harvesters, mowers, etc. Efficiency tests of gasoline and steam engine.

121. Farm Architecture. Two credit hours. First semester. Prerequisite, Drawing 125. Mr. Ramsower.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

*Not given, 1914-15.

123. Forest Soils. Two credit hours. First semester. Forestry Course. Prerequisite, Geology 165 or equivalent. Mr. McCall.

A brief study of the topography, drainage, soils, and climatic features of the United States. The work is arranged with special reference to the needs of students in the Forestry Course.

For Advanced Undergraduates and Graduates

107. Advanced Soils. Four credit hours. First semester. Prerequisite, Agronomy 104 or 105. Mr. McCall.

Lectures on (a) general character and the distribution of the more important soil types of the United States and their adaptability to crops, (b) the factors underlying soil fertility, with special reference to the effect of different methods of cultivation and cropping. The lectures will be supplemented by field trips for the identification and mapping of soil types and by laboratory work, which will include the mechanical analysis of soils and a study of their physical behavior.

110. Agricultural Experimentation. Three credit hours. Second semester. Mr. McCall.

Lectures upon history and development of experiment stations, methods and character of station work, and the interpretation of experimental results. Seminars devoted to critical study of experiment station literature, and to the methods of experimentation.

113. Field Crop Improvement. Three credit hours. First semester. Prerequisite, Agronomy 106. Mr. McCall.

A study of the principles involved and the methods used in the improvement of field crops.

For Graduates Only

Special work in soils and crops is offered for students desiring to take a graduate course in agronomy. Students taking this work will be given an opportunity to prepare for work in the United States Department of Agriculture and for college and experiment station positions.

115-116. Advanced Crop Production. Five to ten credit hours. The year.

Research and monograph work in one or more of the cereal or forage crops.

117-118. Advanced Crop Improvement. Five to ten credit hours. The year.

Research work in plant breeding, the study of plant breeding experiments at the University and at the State Experiment Station, and the investigation of crop improvement work in other states and countries.

119-120. Research Work in Soils. Five to ten credit hours. The year.

The preparation of monographs and special laboratory or field work on topics connected with the subject of soils, including (a) methods of surveying and mapping, (b) the relation of soil types to crop production, and (c) the influence of certain physical properties upon crop production.

FOR SHORT COURSES ONLY

Agricultural Engineering

51. Farm Structures. Four credit hours. First term. Mr. Ramsower.

Lectures and laboratory covering (a) laying out the farm and locating the buildings; (b) construction of farm buildings, building materials, ventilation, painting, etc.; (c) designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; (d) concrete and its uses.

52. Farm Machinery. Four credit hours. Second term. Mr. Ramsower.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

54. Farm Power. Four credit hours. Second term. Mr. Ramsower.

A study of power on the farm, including gasoline, oil, and steam engines, windmills, water supply, and lighting systems.

53. Drainage. Three credit hours. First term. Elective. Mr. Ramsower.

Lectures and laboratory covering the detailed cost of drainage systems, size of tile, use of level, etc.

Farm Crops

51-52. Crop Production. Four credit hours. The year. Mr. Livingston.

The first half of the year will be devoted to the study of corn and the small grain cereals, while the work of the second half will cover

the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and the care of the seed, the preparation of the seed-bed, cultural methods and the harvesting of the crop. The laboratory work is planned to give the student training in the classification of the different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purpose.

The work is planned with special reference to Ohio conditions.

53-54. Soil Management. Four credit hours. The year. Mr. McCall.

A brief account of the origin of the soil and its physical and chemical composition, followed by a detailed study of management of the soil with reference to the maintenance of the productive capacity of Ohio farms. The attention of the student is directed to the necessity of making a study of his own soil for the purpose of determining the factors which are limiting his crop production. Cultural methods are discussed with special reference to the preparation of the seed-bed and the use of farm manures and commercial fertilizers.

AMERICAN HISTORY

Office, Room 207, University Hall

PROFESSOR KNIGHT, PROFESSOR HOCKETT, MR. SCHLESINGER

101-102. Political History of the United States. Three credit hours. The year. Mr. Knight, Mr. Hockett, Mr. Schlesinger.

An outline course covering the period 1750-1910, considering political, economic, and personal aspects of American history. Bassett's *Short History of the United States* will be used as text-book, supplemented by outside reading. Recitations and reports.

126. Development and Administration of National Resources. Three credit hours. Second semester. Prerequisite, American History 101-102, unless the student has received entrance credit of one unit in United States History. Mr. Hockett.

An historical approach to such present-day problems as conservation, irrigation, afforestation, and disposition of the public lands. The course will deal with the origin and disposition of the public domain; the westward spread of population; the development of means of transportation; federal promotion of agricultural education and experimentation, and similar questions, in their inter-relations. This course is open only to students of the College of Agriculture.

ANATOMY AND PHYSIOLOGY

Biological Hall, Rooms 12 to 21

PROFESSOR BLEILE, ASSOCIATE PROFESSOR SEYMOUR, ASSISTANT
PROFESSOR DURRANT, DR. ALLEN

The facilities provided for the study of anatomy, histology, and physiology are good. The laboratory is supplied with skeletons, manikin, and many models of the organs of the body. The apparatus for work in physiology is of good construction and adequate for the performance of fundamental physiological experiments.

For work in histology, the equipment including sixty individual tables for student work, each one being supplied with a good microscope and the various accessories. The equipment of the laboratories makes it possible to offer work along certain lines to advanced students.

101-102. Human Anatomy and Physiology. Three credit hours. The year. This course must be preceded by a course of chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Allen.

103. General Physiology. Three credit hours. First semester. Short Course in Agriculture. Mr. Durrant.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Courses 101-102. Mr. Bleile.

ANIMAL HUSBANDRY

Live Stock Pavilion

PROFESSOR PLUMB, ASSISTANT PROFESSORS KAYS AND JACOBY,
MR. HISLOP, MR. GUSLER, MR. WILEY

The University herd contains a large number of valuable high-class animals. These include excellent specimens for class room work of pure bred Shorthorn, Aberdeen Angus, Jersey, Guernsey, Holstein, Friesian, Kerry, and Red Polled cattle, and a variety of pure bred and grade beef steers. Good specimens of Merino, Southdown, Shropshire, Horned Dorset, Cheviot, and Cotswold sheep, and Berkshire, Poland-China, Duroc-Jersey, and large Yorkshire swine are also kept. For years the department has shown specimens of the University stock at the International Live Stock Exposition, where numerous important prizes have been won. These show animals are used extensively in the judging work of the students. The University owns some choice pure bred Percheron, Clydesdale, and Hackney mares, and good specimens of work horses. In addition to this, at conven-

ient distances from Columbus are famous studs of imported Percheron, French Coach, German Coach, and Belgian horses. Students are conducted to Columbus stables containing large numbers of horses, and to stock farms about Columbus and in neighboring counties, where methods of feeding and handling may be studied and animals inspected. Each year a class of students attends the International Live Stock Exposition at Chicago in charge of instructors, spending a few days among the stock exhibits, the Union stock yards, and packing houses. Class room facilities in animal husbandry are of a high order. The judging pavilion for live stock is a beautiful brick structure, having a room 112 feet long, with tan-bark floor, on which stock may be shown to the best advantage. This building, with the new cattle and horse barns, all constructed in 1907 at the cost of \$80, 000, gives the University the finest facilities for teaching Animal Husbandry. As additional facilities for instruction, the University has a superior collection of herd, flock, and stud books of the various American and European breeding associations. These are used in laboratory work in the Principles of Breeding and the study of breeds. There is also a large collection of lantern slides of breeds and types of animals, various instruments for measuring and studying stock, specimens of feeding stuffs, wools, and other animal products.

Four-Year Course

101. Types and Classes of Cattle and Sheep. Four credit hours. First semester. Mr. Gusler.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Mr. Gusler.

A discussion of the various types, classes, and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Mr. Kays.

Lectures, text-books, and recitations upon the history, development, characteristics, and adaptation of types and breeds of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Mr. Kays.

Covers the subject of cattle and swine on the same basis as Course 103.

105. Feeding Animals. Three credit hours. First semester. Mr. Vivian, Mr. Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs, and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations, in studying rations in practical use in the community, and suggesting improvements, if desirable. The economy of the subject is carefully considered. Mr. Vivian has charge of the class the first part of the semester on the subject of the chemistry of foods and nutrition, Mr. Plumb taking the balance of the semester in a discussion of practical feeding problems.

116. Dairy Cattle. Four credit hours. Second semester. Mr. Plumb.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases, and poultry management. Mr. Jacoby.

Laboratory work will consist of practise in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester.

One lecture and one discussion period a week. A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern States, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures. Prerequisite, Course 117-118.

120. Poultry Feeding. One credit hour. Second semester. Practise work in feeding and caring for a flock of fowls for one month to be assigned. Mr. Jacoby.

Each student will be required to visit the poultry plant morning,

noon, and afternoon to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. First semester. A series of lectures for students in home economics.

122. Incubator Practise. One credit hour. Second semester. Practise work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon, and afternoon.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Mr. Plumb.

Lectures and seminary work on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practise in shearing is required.

106. Principles of Breeding. Four credit hours. Second semester. Mr. Kays.

Lectures, text-books, and recitations upon the subject of heredity from various points of view in its application to breeding farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction and working out problems in heredity from herd books. Students taking this course should have had either Course 103 or 104, and preferably both. Also the course in Zoology in the freshman year.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Mr. Plumb, Mr. Kays, Mr. Hislop.

This is an advanced class for students who have already had the work of the junior year in Courses 103 and 104. The purpose is to give a more detailed consideration to type and breed conformation, with an emphasis on practise in judging groups and classes and rendering required reasons therefore. Only students who have generally covered certain necessary judging work are expected to take this course.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period. This course should be preceded by Courses 105 and 106. Mr. Kays.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep,

and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool, and pork.

109. Horse Training, Harness and Vehicle. Two credit hours. First semester. Mr. Kays.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle, and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. One credit hour. Second semester. Mr. Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. Second semester. Mr. Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practises of the live stock markets and yards, the market classification and grading, the export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market developments. Visits are also made to stock yards, transportation agencies, packing houses, etc.

113. Types and Breeds of Live Stock. Three credit hours. Third year. Second semester. Elective. Mr. Kays.

For veterinary college students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

Apprentices' Course in Animal Husbandry

125. The Feeding and Care of Animals. Three credit hours. First semester. Mr. Hislop.

A general consideration of the subject of animal nutrition and practical feeding, including the care of animals in association with feeding.

133. The Breeding of Animals. Three credit hours. Second semester. Mr. Kays.

The breeding of farm animals is considered in some detail. A text-book will be used in this subject.

Graduate Work

Graduate Work in Animal Husbandry will be provided in this department to suit the needs of the student, under the general rules of the University for this work.

Courses are offered as lines of special study under departmental direction. Special investigational facilities are at hand, in the use of the University stables, the laboratory in agricultural chemistry, the extensive library of works on animal husbandry, the large stables in and about Columbus, etc. No animal husbandry department in America has at its disposal a more comprehensive supply of material for the student of the horse.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. First year. Throughout the year.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours per week, both score card and comparative judging being used.

54. Feeding. Three credit hours. Second term. Second year.

A study of the principles of nutrition, character, and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

55. Live Stock Judging. Four credit hours. First term. Third year.

This is a course for the short course men who have had the work of the freshman year in Types and Breeds of Farm Animals. The object is to lay special stress upon type and breed conformation and give more extended practise in judging animals.

53. Dairy Cattle. Four credit hours. First term.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

57-58. Live Stock Management. Four credit hours. The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

ARCHITECTURE

Office, Brown Hall

PROFESSOR BRADFORD, PROFESSOR CHUBB

101-102. History of Architecture. Three credit hours. The year. Lectures illustrated by lantern slides. Mr. Chubb.

ART

Office, Hayes Hall

MRS. DACHNOWSKI, MISS ROBINSON, MISS SHEPHERD

101-102. Design and Composition. Two credit hours. The year. Miss Robinson, Miss Shepherd.

This course is designed to develop appreciation of harmony of line, space, and color. It brings into play the creative imagination and establishes a basis for critical judgment along all art lines. Media: pencil, ink, and water color.

105-106. Design and Composition. Two credit hours. The year. Prerequisite, Course 102. Mrs. Dachnowski.
(105 repeated the second semester.)

Continuation of Art 102 with advanced problems in line, space, and color as applied to decoration.

121-122. Costume Design. Two credit hours. The year. Prerequisite, Course 101-102. Prerequisite or concurrent, Course 105. Miss Shepherd.

(121 repeated the second semester)

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, Veterinary Laboratory Building

PROFESSOR MORREY, ASSISTANT PROFESSOR STARIN,
MR. HUFNAGEL, MISS MCCOY

These courses in Bacteriology, except 104, are open to advanced undergraduate and graduate students only. Students below the rank of junior are not admitted. The instructor in charge must be consulted before electing.

104. Agricultural Bacteriology. Three credit hours. Second semester. For two-year courses in Agriculture and Horticulture Mr. Starin.

107. General Bacteriology. Three to five credit hours. First semester. Mr. Morrey, Mr. Starin, Mr. Hufnagel, Miss McCoy.

108. Pathogenic Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey, Mr. Starin, Mr. Hufnagel, Miss McCoy.

110. Dairy Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey.

112. Soil Bacteriology. Three to five credit hours. Second semester. Prerequisite, Course 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Courses 107 and 110, or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Courses 107 and 112, or equivalents. Mr. Morrey.

BIBLIOGRAPHY

The Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

A required course for students in the College of Agriculture. This course consists of lectures and problems on the use of reference books, indexes, catalogues, and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BIBLICAL LITERATURE, HISTORY, AND EXEGESIS

Office, Orton Hall

PROFESSOR BREYFOGLE

101. Biblical Literature. History and religion in outline. Three credit hours. First semester. A consideration of the literature, history, and religion of the Old Testament. Lectures, quiz, and reports.

This is a general course touching upon the historical crises of the Old Testament with an attempt to recreate the political, economic, and social conditions as a basis for the better understanding of the

moral and religious teachings. A stereopticon will be used, showing the latest discoveries in Palestine, Egypt, and Assyria which bear upon our period.

102. Historical Christianity in Outline. Three credit hours. Second semester. A consideration of Judaism, of the life, work, and teachings of the Founder of Christianity, and of Apostolic teaching.

This course is intended to give the student a systematic knowledge of the New Testament in its historical setting. It will consider the relation of Christianity to Hellenistic Judaism, the teachings of Jesus as shown by a comparison of the gospels, and the expansion of Christianity throughout the world during the Apostolic times. Stereopticon views will be freely used and endeavor made to familiarize the student with the text.

***103-104. The History of Religion in Outline.** Three credit hours. The year. A consideration of the great book religions of the world. Lectures, quiz, and reports.

BOTANY

PROFESSOR SCHAFFNER, ASSISTANT PROFESSORS GRIGGS AND DACHNOWSKI, DR. DETMERS, MR. STOVER

The department offers good facilities for instruction and investigation. The museum contains a large amount of material, illustrative of the various groups of plants, the collection of Ohio woods being complete. There is a good general herbarium and a state herbarium consisting of about thirty thousand sheets of Ohio plants. The laboratories are well equipped with dissecting and compound microscopes, also the usual appliances for doing both elementary and advanced morphological and physiological work. The greenhouse attached to the botanical building is an important adjunct to the department, furnishing much fresh material for study. It is also used as a laboratory for certain phases of the work in plant physiology and plant genetics.

101-102. General Botany. Four credit hours. The year. Text-books, Curtis's *Nature and Development of Plants* (2d edition), Schaffner's *Laboratory Outlines for General Botany* (3d edition). Mr. Schaffner, Mr. Griggs, Miss Detmers, Mr. Stover.

This course gives a general survey of the plant kingdom by the comparative method of morphological types and life cycles. It is

*Not given in 1914-1915.

intended to present a general view of the morphology, evolution, and classification of plants from the lowest to the highest. Much emphasis is placed on the economic aspects of botany.

107. Plant Histology. Two credit hours. First semester. Prerequisite, Botany 101-102, or equivalent. Miss Detmers.

110. General Dendrology. Two credit hours. Second semester. Text-book, Schaffner's Field Manual of the Trees of the Northern United States. Mr. Schaffner, Mr. Brown.

A study of trees and shrubs, with practise in the identification of woody plants, both in summer and winter condition. Students are required to prepare a dendrological herbarium.

112. Elementary Botany. Four credit hours. Second semester. Text-books, Bergen and Caldwell's Practical Botany and Kellerman's Spring Flora (new edition). Miss Detmers.

This is a general elementary course, consisting mostly of organography, plant physiology, and a study of the native flora, but some instruction is also given in ecology and classification and the economic phases of the subject. The students are required to do work in the field both in observation and collecting.

This course cannot be used for University credit.

113. Morphology of the Higher Fungi. Three credit hours. First semester. One lecture and two laboratory periods. Prerequisite, Botany 101-102. Mr. Stover.

A study of the fungous flora, both fleshy and woody forms, with special reference to edible and poisonous mushrooms and to the wood-destroying species.

116. Plant Pathology. Three credit hours. Second semester. Prerequisite, Botany 101-102, or equivalent. Text-book, Stevens and Hall, Diseases of Economic Plants. Mr. Stover.

The diseases of plants due to physical causes and animals are briefly considered, but the main part of the course is devoted to a study of the parasitic fungi most destructive to cultivated plants. Each student takes some economic subject or group of parasites for special study and is required to prepare a complete report on the same.

117-118. Forest Ecology. Four credit hours. The year. Prerequisite, Botany 101-102, or equivalent. Mr. Dachnowski.

In this course the emphasis is laid on the ecological study of forests, although general ecology is also considered. It includes work on the native and introduced trees with a floristic study of some special group. This is supplemented by a study of the development of woods, characters of coniferous, hard, and soft woods, and changes due

to attacks of fungi. The students are required to prepare a series of gross and microscopic sections. A study is also made of the genetic development of local forests.

121. Plant Genetics. Two credit hours. First semester. One lecture, one laboratory period. Prerequisite, Botany 101-102 and one additional year of some biological subject. Students electing this course should also take Zoology 129. Mr. Schaffner.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, fluctuations, and mutations, together with methods of procedure in crossing both lower and higher plants. Emphasis is placed on heredity in wheat and corn.

125-126. Plant Physiology. Four credit hours. The year Lectures and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Dachnowski.

The course is an experimental study of the soil, air, and biotic relations of plants. It aims to give training and instruction in such phases of nutrition, growth, movement, and the tropisms of plants as have a practical bearing on agriculture, forestry, and general biology.

127-128. General Plant Pathology. Four credit hours. The year. Laboratory and field work. Prerequisite, Botany 101-102, or equivalent. Text-books: Stevens' Fungi, Stevens and Hall's Diseases of Economic Plants. Mr. Griggs.

142. Dendrology of Conifers. Two credit hours. Second semester. Prerequisite, Botany 101-102. Mr. Schaffner.

CHEMISTRY

Office, Chemistry Hall

PROFESSORS MCPHERSON AND EVANS, DR. BOORD, MR. HOCKETT,
MR. DAY, MR. SCHMIDT, MR. HUMMELL, MR. HOLLER, AND
DEPARTMENT FELLOWS

The laboratories of the department accommodate over twelve hundred students. Each laboratory is equipped with all necessary conveniences—water, gas, electric lights, distilled water piped from a large still in the attic, steam ovens, automatic air blasts, suction pumps, etc. The department is liberally supplied with the best apparatus and materials for both lecture-room and laboratory work. Each student has his own desk with drawers and locker. All supplies are procured from the chemical store room, which has always on hand a complete stock of all necessary materials.

***101. Elementary Chemistry.** Four credit hours. First semester. One lecture, one quiz, six hours' laboratory work weekly. Mr. Evans, Mr. Hummell.

A general introductory course on the chemistry of the non-metals. It is distinctly elementary in character and is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses. Students taking this course should follow with Course 102, second semester.

***102. Elementary Chemistry and Qualitative Analysis.** Four credit hours. Second semester. One lecture, one quiz, six hours' laboratory work weekly. Prerequisite, Course 101. Mr. Evans, Mr. Hummell.

A general introductory course on the chemistry of the metals. The laboratory work deals with the elementary principles of qualitative analysis. The course is arranged for students in short courses only. No credit is allowed for it in the regular four-year courses.

105. Elementary Chemistry. Four credit hours. First semester. Mr. Evans, Mr. Day, Mr. Holler.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Course 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 105. Mr. Evans, Mr. Day, Mr. Holler.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. First semester. One lecture, one quiz, six hours' laboratory work weekly. Mr. Evans, Mr. Hockett, Mr. Schmidt, Mr. Hummell.

A general course on the chemistry of the non-metals. It is more advanced than Course 105, and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Course 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Course 109. Mr. Evans, Mr. Hockett, Mr. Schmidt, Mr. Hummell.

A general course on the chemistry of the metals. It is more advanced than Course 106. The laboratory work is a general course in qualitative analysis.

•Not given, 1914-1915

127. Organic Chemistry. Four credit hours. First semester. Three lectures, one quiz, weekly. Prerequisite, an acceptable course in general chemistry. Mr. McPherson, Mr. Boord.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Two lectures weekly. Prerequisite, an acceptable course in general chemistry and qualitative analysis; also in quantitative analysis except by special permission of the instructor. Mr. McPherson.

This is a general course in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine hours laboratory work weekly. Laboratory open afternoons. This course must be accompanied or preceded by Course 151-152. Mr. McPherson, Mr. Boord.

A general course in the preparation of typical organic compounds.

CIVIL ENGINEERING

Office, Brown Hall, Room 33

MR. SLOANE, MR. MCCOY

121. Surveying and Topographic Drawing. Six credit hours. First semester. Prerequisite, Mathematics 114 or 132, and Engineering Drawing 101.

The work will be divided into lectures, recitations, field work, computing, and drawing in such manner as the schedule and weather will permit.

DAIRYING

Office, Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSOR CUNNINGHAM,

MR. CLEVENGER, MR. STOLTZ

The department of dairying occupies the greater part of the first floor of Townshend Hall. It offers good facilities for instruction and investigation. The laboratories are equipped for the following lines of work: milk testing, care and bottling of sanitary milk, butter-making, cheesemaking, ice cream-making, milk-condensing, dairy mechanics.

Individual milk testing apparatus is furnished to each student. In the laboratory are found Babcock centrifuges, balances, etc., to make a complete test of the milk. The department operates a com-

mercial guaranteed milk and cream distributing plant. It has its own wagons for distributing the products and is equipped with modern milk dealers' implements, such as bottlers, washing outfits, and steam pressure sterilizers. In connection with this plant there is also a refrigerator provided for the bottle milk. The milk is received from two sources, part from an inspected farm and the balance from the University herd. The milk is bottled and sold, the students doing the work.

The farm cream separator laboratory is equipped with various styles of cream separators and coolers. The creamery laboratory is equipped with different types of cream ripeners, pasteurizers, starter cans, churns, and printers. Butter is made throughout the year on a commercial basis from milk and cream received from a number of dairies aggregating over 300 cows, and the plant is operated on a regular commercial scale with students doing most of the work. The cheese making laboratory is equipped with a cold curing room and a cellar for making brick and Swiss cheese. Cream cheeses are made each week as a part of the commercial products of the laboratory and instruction is given along this line during the college year. The ice-cream making laboratory is equipped with freezers, brine, and ice, and the proper mixing contrivances. A laboratory is provided for milk condensing where a condensing plant is operated for instructional purposes.

Dairy mechanics work is provided for in special laboratories which are equipped with motors, engines, a refrigerating plant, pumps, pipe fitting apparatus, and soldering outfit. The laboratory work is of the most practical kind and is supplemented by lectures, recitations, and quizzes in the class room.

Lectures and practical demonstrations are given in dairy farm work, especial attention being paid to the Advanced Registry and Cow Testing Association work. The department has charge of this work in Ohio.

The work of the department is designed for three classes of students, the regular students in the four-year courses, the short courses, and the students of the special dairy courses. The latter is arranged for the practical dairyman who cannot devote a longer time to the scientific study of dairy methods.

Four-Year Course

101. Principles of Dairying. Four credit hours. First semester. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures are given on secretion of milk and the testing of milk and cream for butter fat; feeding and caring for dairy cows as related to the economical production of milk; formation of profitable herds; testing individual cows and herds for butter fat production, and entering and testing cows for the Advanced Registries. In the laboratory, practical work will be given in testing milk and cream for butter fat, testing dairy herds for butter fat production, the practice of operating farm cream separators, the care of milk and cream, buttermaking, and cheesemaking, also plumbing and soldering as needed in dairy operations.

102. Farm Dairying. Four credit hours. Second semester. Mr. Erf, Mr. Cunningham.

Lectures will be given on the planning and equipping of dairy barns, milk houses, dairy plants, farm milk houses, refrigerators, and arranging of yards. Lectures will also be given on the handling and manufacturing of farm dairy products for the market, dairy farm management, and a study of the comparison of the different systems under various conditions. The laboratory work will consist of designing dairy barns, dairy plants, dairy houses, refrigerators, etc., the setting up and operating of dairy machinery, scoring dairy farms and dairy plants.

103 or 104. City Milk Supply. Two to four credit hours. First or second semester. Mr. Cunningham,

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105 or 106. Buttermaking. Four credit hours. First semester. Repeated second semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107 or 108. Cheesemaking. Three credit hours. First semester. Repeated second semester. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of Cheddar, Swiss, Brick, Limburger, Club, Cream, Neufchatel, Cottage, Pimento, and Camembert cheeses. Practical

work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice Cream Making and Milk Condensing. Five credit hours. Second semester. Mr. Cunningham.

Lectures will be given on the theory of milk condensation and ice cream making. Practical work with the vacuum pans and sterilizers will be given in the condensing laboratory and practical work in ice-cream making in the ice-cream laboratory.

111. Dairy Mechanics. Three credit hours. First semester. Mr. Clevenger.

This work consists of one-hour lectures and three-hour laboratory periods. It treats of the construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, hanging of shafting and pulleys, pipe fitting and soldering, and the operating of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Three credit hours. The year. Mr. Erf.

Three lines of work are offered in this course. (1) Economic Dairying. This consists of visiting ten dairy farms and determining the profit or loss on these farms. A complete description of the farms is expected and suggestions as to improvements in methods used. (2) Investigational Work. This consists in working out some practical problem along dairy lines, and when work is done in the laboratory a fee will be charged. (3) Seminar Work. Seminar on assigned readings in experiment station and other dairy literature will be arranged in this course.

117-118. Advanced Dairying. Five to ten credit hours. The year. Mr. Erf.

This course is intended for graduate students.

Special work will be arranged for students desiring to take up any particular phase of dairying. Any apparatus on hand will be furnished and room will be arranged for students desiring to take up any line, such as farm dairying, the feeding and breeding of dairy cows in relation to milk production, the study of milk in its various phases, buttermaking, cheesemaking, milk-condensing, ice cream-making, etc.

FOR SHORT COURSES ONLY

52. Elementary Dairying. Three credit hours. Second term. First year. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat; and entering of cows in the Advanced Registry. In the laboratory practical work will be given in testing milk and cream for butter fat and testing dairy herds for butter fat production.

53. Business of Dairying. Three credit hours. First term. Second year. Mr. Erf, Mr. Cunningham, Mr. Stoltz, Mr. Clevenger.

Lectures will be given on laws and regulations relating to the composition of dairy products, the handling of milk on the farm, and the manufacture of dairy products on the farm. Laboratory work will be given in testing cream, butter, and cheese, the handling and manufacture of butter and cheese, and the designing of dairy barns and milk houses,

56. Specialized Dairying. Three credit hours. Time to be arranged.

This course is intended for those who wish to specialize in Dairy Farm Management, City Milk Supply, Buttermaking, Cheesemaking or Ice cream-making. The work is largely laboratory work, supplemented with lectures.

DRAWING

See Engineering Drawing

ECONOMICS AND SOCIOLOGY

Office, Room 211, University Hall

PROFESSORS HAGERTY, HAMMOND, MCKENZIE, LOCKHART, AND
HUNTINGTON, ASSISTANT PROFESSORS WALRADT, SHEETS,
RUGGLES, AND PARRY, MISS RENZ, MR. DRURY

I. Economics

135-136. Principles of Economics. Three credit hours. The year. Not open to first-year students. Mr. Walradt, Mr. Ruggles, Mr. Parry, Mr. Drury.

A careful study of the laws of production, exchange, distribution, and consumption of wealth, combined with an analysis of the indus-

trial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures, and individual investigation.

139-140. The Elements of Accounting. Two credit hours. The year. Prerequisite, registration in Economics, 135-136. Mr. Huntington and assistants.

In this course the student is made familiar with the essentials of accounting as exemplified in the main types of bookkeeping. The main object is to give the student such a grasp of fundamental principles as will enable him to understand the significance of accounts, which with the increasing emphasis on the business side of farming becomes important to the agriculturist as well as to other business men.

141. Public Finance. Two credit hours. First semester. Prerequisite, Economics 135-136. Mr. Walradt.

Public expenditure; public revenues, with special reference to taxation; public credit; the budget; financial administration.

149-150. Business Law. Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Ruggles.

This course aims to cover the subjects most useful to men looking to a business career. It is not intended as a substitute for courses in the law school. Its purpose is to give the young business man a grasp of legal principles, not to train him to be a lawyer. The main topics to be found in contracts, agency, sales, bailments and carriers, bills and notes, and partnerships and corporations are treated. Problems covering these topics are presented and discussed in class.

161. Mercantile Institutions in Domestic Trade. Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Hagerty.

The evolution and organization of mercantile institutions. Methods of marketing goods, the functions of the various distributors, and the work of produce exchanges. The internal or administrative organization of mercantile concerns. A study of mercantile credit, including the functions of mercantile agencies, credit men's associations, bankruptcy legislation, etc.

144. Problems of Taxation. Two credit hours. Second semester. Prerequisite, Economics 141. Mr. Walradt.

A course dealing with questions of reform in taxation. The Ohio system of taxation will be given special consideration.

***147-148. Financial History of the United States.** Two credit hours. The year. Prerequisite, Economics 135-136. Mr. Walradt.

*Not given in 1914-1915.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans, financial administration, currency legislation, and the development of banking institutions.

153. Money and Currency. Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Walradt.

The relation of money to prices; the cost of living; monetary systems; the gold standard, bimetallism, the gold-exchange standard, government and bank paper money; banking history and legislation; currency and banking reform in the United States, with special reference to the prevention of financial panics, and the provision of adequate credit facilities for the farmers.

167. Railway Economics. Three credit hours. Second semester. Prerequisite, Economics 135-136. Mr. Ruggles.

The development of means of transportation. Railway growth and consolidation. Railway rate theories and practise. Railway commissions and public control. Government ownership of railroads.

II. Sociology

101-102. Principles of Sociology. Three credit hours. The year. Not open to first-year students. Mr. Hagerty, Miss Renz, Mr. Drury.

A study of the fundamental principles of sociology. Textbook, lectures, collateral reading, and individual investigation.

107. The Family. Three credit hours. First semester. Prerequisite, Sociology 101-102. Miss Renz.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions, and its problems.

120. The Household. Three credit hours. Second semester. Prerequisite, Sociology 101-102. Miss Renz.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman. This course will also consider the present organization of the household from the point of view of its efficiency, and the meaning of the changes which it is undergoing.

***111. Poverty.** Three credit hours. First semester. Prerequisite, Sociology 101-102. Mr. Hagerty.

*Not given, 1914-15.

A study of the personal and social causes of poverty and dependency, such as incapacity, disease, degeneracy, idleness, extravagance, maladjustment, exploitation, housing conditions, child labor, inadequate training, misapplied charity, etc. What constitutes a reputable standard of living, and how it may be maintained.

***112. Preventive Philanthropy.** Three credit hours. Second semester. Prerequisite, Sociology 109 or 111. Mr. Hagerty.

109. Modern Charity. Three credit hours. First semester. Prerequisite, Sociology 101-102. Mr. Hagerty.

This course is devoted to a study of the evolution of society, the physical environment of man, the biological and racial factors, group formation and structure, social psychology, social control, social pathology, institutional sociology, and social progress. The latter part of the second semester is devoted to a concrete study of social problems.

ENGINEERING DRAWING

Office, Room 42, Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSOR MEIKLEJOHN, MR.

HARPER, MR. WILLIAMS, MR. SHEETS, MR. TURNBULL,

MR. GILBERT, MR. NORRIS

101. Elementary Mechanical Drawing. Two credit hours. First semester.

116. Pen Drawing. Two credit hours. Second semester.

123. Engineering Drawing. Two credit hours. First semester. Required in course in Forestry, first year.

125. Mechanical Drawing. Two credit hours. First semester. Required in courses in Agriculture and Horticulture, first year.

126. Repetition of 125, second semester.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Drawing 127.

127 and 128 are required in Home Economics, second year.

137. Engineering Drawing. Two credit hours. First semester. Prerequisite, Drawing 123 or 101.

A course especially for forestry students. Practise in topographic drawing, lettering, tracing, and blue-printing, and the design of simple

*Not given in 1914-15.

engineering structures, such as culverts, trestles, small wooden bridges, and dams.

138. Engineering Drawing. Two credit hours. Second semester. Continuation of Course 137.

ENGLISH

PROFESSORS DENNEY, TAYLOR, MCKNIGHT, AND GRAVES, ASSISTANT
PROFESSORS DUNCAN, BECK, AND KETCHAM

101. Paragraph Writing. Description and Narration. Two credit hours. First semester. (Course 101 will be repeated in the second semester as Course 102 for the benefit of those who fail, the class meeting Saturdays at 9 a. m.) All instructors.

104. Paragraph Writing. Exposition and Argumentation. Two credit hours, Second semester. Prerequisite, Course 101. Same hours as for Course 101. (Course 104 is also offered in the summer session.) All instructors.

105. Advanced Description and Narration. Two credit hours. First semester. Prerequisite, Course 101. Mr. Beck.

106. Advanced Exposition and Criticism. Second semester. Prerequisite, Course 101. Mr. Beck.

121. Principles of Public Speaking. Two credit hours. First semester. Mr. Ketcham.

122. Debating. Two credit hours. Second semester. Mr. Ketcham.

132. Survey of American Literature. Three credit hours. First or second semester. No prerequisite course. Mr. Taylor, Mr. McKnight, Mr. Graves, Mr. Duncan, Mr. Beck.

133. Survey of English Literature. Three credit hours. First or second semester. No prerequisite course. Mr. McKnight, Mr. Graves, Mr. Duncan, Mr. Beck.

FORESTRY

Page Hall

PROFESSOR LAZENBY, ASSISTANT PROFESSOR SCHERER,
MR. PFLUEGER

For field work in Forestry, the University estate has a typical primitive woodlot, a fringe of forest trees bordering the Olentangy river, and a good collection of individual trees and shrubs on the

campus. Columbus and vicinity offer fairly good opportunities for the study of forestry. Numerous electric car lines take the students, at small cost, to a variety of hard wood forests where different conditions and methods of treatment can be studied. Lumber yards, dry houses, wood working industries, and saw mills are to be found in and near Columbus.

In laboratory work, students receive instruction in wood preservation, timber physics, and certain features of wood technology, and for this a collection of wood specimens, sections of trees, etc., are provided, and will be increased as rapidly as possible. Students will be encouraged to carry on original work, and to write theses under the supervision of an instructor. Special credit is given for such work, but a thesis is not required for a degree.

The University library contains a good and rapidly growing collection of books and pamphlets on forestry and quite a number of forestry journals are regularly received.

The department is equipped with a collection of apparatus and woodsmen's tools for use in the laboratory and forest.

101. Introduction to Forestry. Two credit hours. First semester.

A general presentation of the subject, its objects, methods, and economic importance. A study of the trees and shrubs in the University woodlot and on the campus. Lectures and field work.

102. Silvics. Two credit hours. Second semester.

A continuation of the study of local trees and shrubs from the forester's standpoint. The biological characteristics not only of species but of stands and societies of trees and shrubs.

103. History and Relations. Two credit hours. First semester.

The history of forestry in other countries to show a parallel to almost every progressive step taken in this country. The relation of forestry and forests to climate, soil, waterways, and general welfare.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Two lectures or recitations, and one two-hour period of field work weekly.

The cultivation and management of trees for various specific purposes, such as windbreaks, hedges, shade, and ornament, small plantations for post and pole timber, for maple syrup, for nuts, etc. The care of farm woodlots; treatment of diseased and injured trees.

The above courses, while designed for forestry students, are open and adapted to students of other departments.

105. Silviculture. Three credit hours. First semester. Two lectures and three hours' field work weekly.

A review of soil, climate, exposure, and other ecological factors influencing forest growth; description of typical woodlands and forests; collecting and testing forest tree seeds. Care of woodlands and forests, including natural regeneration, pruning, thinning, etc.

106. Silviculture. Three credit hours. Second semester. Two lectures and three hours' field work weekly.

A study of forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation, practise in seedbeds and nurseries; sowing seeds and transplanting in forests; establishment, improvement, and extension of woodlands.

Prerequisite, Courses 101 and 102.

107. Forest Mensuration. Four credit hours. First semester. Three lectures and three hours' field work weekly.

Methods of measuring the volumes of felled and standing trees; of ascertaining the volume of definite forest areas; studying the age; rate of growth and future yield of trees and forests; making stem, stump, and sectional analysis; surveys and estimates of values of trees and forest stands.

Prerequisite, Courses 105 and 106.

108. Forest Utilization; Lumbering. Four credit hours. Second semester. Three lectures and one three-hour period of field work weekly.

Methods of lumbering, including transportation and milling, marketing, and uses; minor woodlot and forest industries; by-products of the forest.

Prerequisite, Course 107.

109. Forest Management. Four credit hours. First semester. Three lectures and one three-hour period of field work weekly.

Forest surveys and working plans; organization and administration; regulation and finance.

Prerequisite, Courses 105, 106, 107.

111. Forest Protection. Two credit hours. First semester. Lectures and recitations.

Protection from fire and other inanimate enemies; from insects, fungi, and other animate enemies.

112. Forest Craft. Two credit hours. Second semester. Lectures and practical exercises. Packing; camping; ranger cabins; trails; forest telephone and telegraph lines; first aid to sick and injured.

113. Forest Economics. Two credit hours. First semester. Lectures and recitations.

The economic value and benefits of forests; state and national forest laws and organization; state and national forests, and forest problems; the forest reserves of the United States; civil service regulations; foreign forest service.

Prerequisite, Courses 105 and 106.

114. Forest Policy. Two credit hours. Second semester. Lectures and recitations. Functions of the federal government, the states, counties, municipalities, and communities relative to forestry. Public regulation of privately owned forests.

Prerequisite, Course 113.

116. Forest Products; Timber Physics; Wood Technology. Four credit hours. Second semester. Two lectures and one two-hour laboratory period weekly. The physical properties of wood; various methods of wood preservation; wood working plants and industries; various uses of wood.

Prerequisite, Courses 105 and 106.

117-118. Seminar. One credit hour. The year.

119-120. Advanced Forestry. Three to five credit hours. Investigation and research. Subject to be assigned. Open as a senior elective in Forestry.

GEOLOGY

Office, Room 1, Orton Hall

PROFESSORS PROSSER AND BOWNOCKER, ASSISTANT PROFESSOR HILLS, MR. VERWIEBE, MISS MARK, MR. ROBINSON

The University offers excellent facilities for the study of geology. By an act of the Legislature it has been put in possession of all the collections made by the State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. These collections embrace a representation of every geological formation shown in Ohio. Orton Hall, completed at a cost of more than \$100,000, is designed for the permanent accommodation of the large geological collections of the University, and for the work and instruction of the department of Geology. The building is two stories in height, with a high basement; is built of brick and faced with sandstone, and is fire-proof throughout. Some of the material

was contributed by various quarries of the State of Ohio, and almost all of the finer varieties of Ohio building stone are represented in the columns, walls, and ceiling panels of the vestibule.

151. General Geology. Three credit hours. First semester.

The first half of the semester, or while the weather permits, field trips will alternate with the laboratory periods. Field trips Friday afternoon or Saturday morning, when the laboratory work will be omitted for that week. Mr. Prosser, Mr. Verwiebe.

Structural, dynamical, and historical geology. The lectures are illustrated by maps, specimens, and lantern views. The common rock-forming minerals and rocks are studied in the laboratory; while in the field various illustrations of geological structure are pointed out and formations identified.

152. General Geology. Three credit hours. Second semester. Geology 151 repeated. Mr. Prosser, Mr. Verwiebe. Field trips last half of the semester on Friday afternoon or Saturday morning.

153. Applied Geology. Three credit hours. First semester. Prerequisite, Geology 151 or 152. Mr. Bownocker, Mr. Hills, Miss Mark, Mr. Robinson.

The common rocks of the earth's crust, their breaking down, and the formation of mantle rock. Fuels, building stones, lime, cement, clays, salt, phosphate deposits, and the most useful metals are studied.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere, and the ocean. Recitations, lectures, map work, and field work.

For Advanced Undergraduates and Graduates

For prerequisites for the following courses see the Graduate Bulletin.

105. Field Geology. First semester. Three to five credit hours. Mr. Prosser.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

Study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Mr. Bownocker.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings, and map work. The second half, largely to field work and the preparation of reports.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Mr. Prosser, Miss Mark.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the faunas that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of faunas is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three or more credit hours. First semester. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin; the non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals, emphasis will be laid on the products of Ohio.

GERMAN

Offices, Rooms 317 and 318, University Hall

PROFESSORS EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, LEWISOHN, AND BUSEY, DR. KEIDEL, MR. KOTZ, MR. WILDERMUTH

101-102. Elementary German. Four credit hours. The year.

103. Intermediate German. Four credit hours. First semester. Prerequisite, Course 101-102, or two entrance units.

104. Easy Classical Readings and Composition. Four credit hours. Second semester. Prerequisite, Course 103, or three entrance units.

106. Science Reading. Four credit hours. Second semester. Prerequisite, Course 103, or three entrance units.

Students offering four units in German should take Course 107-108. **Advanced German.** Four credit hours.

HOME ECONOMICS

Office, Hayes Hall

PROFESSOR WHITE, ASSISTANT PROFESSORS VAN METER, MISS BLOHM, MISS HATHAWAY, MISS STIMMEL, MRS. WALKER, MISS ROGERS, MISS SKINNER, MRS. GARVIN

101-102. Foods. Five credit hours. The year. Prerequisite, Chemistry 106 or 110. Miss White, Miss Stimmel, Mrs. Walker, Miss Skinner.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost, and value of nutrients in the various food materials. Lectures and quiz are combined with laboratory work.

104. Sanitation. Three credit hours. Second semester. Prerequisite, Bacteriology 107.

Location and construction of the house from the point of view of sanitation; water supply, plumbing, heating, ventilation, and lighting. Interdependence of home and public agencies in securing sanitation and hygiene. Special attention is given to emergencies, first aid to the injured, and home nursing.

105-106. Seminar. Two to five credit hours. The year. Open only to fourth year and graduate students.

117-118. The House. Three credit hours. The year. Second semester, junior year; first semester, senior year. Prerequisites, Art 105, Economics 135, Home Economics 101-102, 111-112 and 104.

Economics 136, and Course 104 may be carried concurrently with Course 118.

Evolution of the house. Principles underlying house arrangement, furnishing, and decoration. Household organization and management with a view to securing the maximum of family welfare.

This course embraces the work formerly offered in Courses 107 and 114.

108-109. Teachers' Course. Two credit hours. The year. Open only to seniors in Home Economics.

A review of principles of education. Observation work, lesson planning, and practise teaching. Lectures and conferences.

110. Dietetics. Four credit hours. Second semester. Prerequisites, Foods 101-102, Physiology 101-102, Agricultural Chemistry 123-124.

A study of the chemical, physiological, and economic factors entering into the normal diet, examination of dietary standards and views of different workers. Some attention to abnormal diet is given.

Laboratory work includes translation of standard dietaries into food materials and some exercise in making dietary studies. Practise is also given in preparation of food for the sick.

111-112. Textiles. Two credit hours. The year. Prerequisite or concurrent, Art 101-102. Miss Blohm, Mrs. Walker, Miss Rogers.

This course includes the study of fibres and fabrics from a historic, economic, and social standpoint. In the laboratory the making of articles involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

113. Dress. Three credit hours. First semester. Prerequisite, Course 111-112. Art 105 must be taken with this work. Miss Hathaway.

In this course, economics, hygiene, design, and color are considered in their relation to dress. The laboratory work includes the drafting and designing of patterns, the careful selection and combination of materials, and the making of a simple, unlined cloth dress.

116. Dress. Three credit hours. Second semester. Miss Hathaway. Continuation and amplification of Course 113. A related Art course must be taken with this work.

In the lectures an outline of the history of costume will be given, which may be taken as a one-hour lecture course without the laboratory. The laboratory work continues Course 113 in the drafting and designing of patterns, and includes the making of silk and draped dresses.

HORTICULTURE

PROFESSOR PADDOCK, ASSISTANT PROFESSORS DAVIS AND MONTGOMERY

101. Principles of Horticulture. Four credit hours. First semester. Four-year course in Horticulture. Mr. Davis.

The principles of plant growth, with special reference to horticultural crops, including the problem of tillage, drainage, frosts, weeds, insects, propagation, pruning, and spraying.

102. Principles of Horticulture. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of Course 101, which is prerequisite. Mr. Davis.

103. Olericulture or Vegetable Gardening. Four credit hours. First semester. Four-year course in Horticulture. Mr. Montgomery.

Including a study of locations, soils, manures and fertilizers, marketing, etc., as related to the home and market garden. Each of the garden vegetables is considered specifically.

104. Olericulture or Vegetable Gardening. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of Course 103. Mr. Montgomery.

105. Pomology. Four credit hours. First semester. Four-year course in Horticulture. Mr. Paddock.

Including the propagation, pruning, spraying, cultivating, harvesting, etc., with special reference to the fruit commonly grown in the temperate zone. Tropical and sub-tropical fruits of commercial importance in the North will also receive consideration. Prerequisite. Horticulture 101 and 102.

106. Pomology. Four credit hours. Second semester. Four-year course in Horticulture. A continuation of Course 105. Mr. Paddock. Prerequisite, Horticulture 105.

107. Plant Variation. Three credit hours. First semester. Four-year course in Horticulture. Mr. Paddock. Prerequisite, Horticulture 105 and 106.

A course designed for those interested in plant breeding and in the modification and improvement of plants by mutation, crossing, dwarfing, forcing, etc., together with a discussion of the current theories of evolution as applied to the variation and amelioration of plants under cultivation.

108. Landscape Gardening. Three credit hours. Second semester. Four-year courses in Horticulture. Mr. Montgomery.

A study of the art of producing picture-like or landscape effects; the making of lawns, walks, drives, and the correct planting of trees, shrubs, and flowers for the external adornment of home and public grounds.

109. Experimental Horticulture. Three credit hours. First semester. Four-year course in Horticulture.

This course is designed to give the student training in research methods. Technical problems are assigned depending upon the needs and the inclination of the student. This work not only gives practise in the application of exact methods, but affords abundant opportunities to become familiar with the literature of horticulture. Prerequisite, Horticulture 103, 104, 105, and 106.

110. Experimental Horticulture. Three credit hours. Second semester. Four-year course in Horticulture. A continuation of Course 109, which is prerequisite.

118. Pomology. Four credit hours. Second semester. Four-year course in Agriculture. Mr. Paddock.

This course deals with the fundamental problems of fruit growing, with special reference to the home or farm orchard and small fruits. The problems of soil location, propagation, pruning, spraying, cultivation, harvesting, and marketing receive special consideration. Open only to third and fourth-year students in the college of Agriculture.

119. Floriculture. Three credit hours. Second semester. Four-year course in Horticulture.

A discussion of the history, propagation, and culture of florists' plants, and the diseases and insects that prey upon them.

FOR SHORT COURSES ONLY

53. Principles of Horticulture. Four credit hours. First term. Course in Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as Courses 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Course in Horticulture. Mr. Davis.

A continuation of Course 53.

55. Vegetable Gardening. Four credit hours. First term. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables. Prerequisite, Course 53-54.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Course 55.

57. Pomology. Four credit hours. First term. Course in Horticulture. Elective for agricultural students. Mr. Paddock.

An adaptation of Courses 105 and 106 to the Short Courses. Prerequisite, Horticulture 53-54.

58. Pomology. Four credit hours. Second term.

A continuation of Course 57. Mr. Paddock.

60. Landscape Gardening. Four credit hours. Second term. Course in Horticulture. Elective for agricultural students. Mr. Montgomery.

A study of the theory and practise of home landscape ornamentation, including the selection, arrangement, and care of trees, vines,

and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared. Prerequisite, Agricultural Engineering 53.

51. Horticultural Plant Forms. Four credit hours. First term. Course in Horticulture. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

59. Pomology. Four credit hours. First term. Elective. Course in Horticulture. Mr. Paddock.

A continuation of Horticulture 57 and 58. Prerequisites, Horticulture 57-58.

64. Vegetable Gardening. Four credit hours. Second term. Course in Agriculture. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease, and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Course in Horticulture. Mr. Montgomery.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practises, such as heating, ventilation, fumigation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Course in Horticulture. Mr. Montgomery.

A continuation of course 65. Prerequisite, Horticulture 65.

INDUSTRIAL ARTS

Office, Room 2, Hayes Hall

PROFESSOR SANBORN, MR. BEEM, MR. FOUST, MR. DENMAN,
MR. SMITH, MR. WRIGHT

The shops occupy the north wing of Hayes Hall and afford excellent facilities for instruction in both the practical details and the underlying principles of carpentry and forging. The carpenter shops are equipped with fifty benches with complete sets of carpenter tools for each, twenty-four turning lathes with the necessary turning tools, a pony planer, a buzz planer, a circular rip and cross-cut saw, a band saw, a boring machine, two trimmers, and two power grindstones. The forge shop is equipped with twenty-five stationary forges with anvils and tools for each, a heating furnace, a gas furnace for hardening and tempering with pyrometer for high temperature measurements, a foot-power hammer, a blacksmith drill, and a punch shear and bar cutter.

Shop Work

101 or 102. Carpentry. Two credit hours. First or second semester. Mr. Beem, Mr. Denman, Mr. Smith.

Practise in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practise work is directly applicable to country life.

103 or 104. Forging. Two credit hours. First or second semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire, and tools, practise in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

MATHEMATICS

Office, Room 314, University Hall

ASSISTANT PROFESSORS PRESTON AND WEST

103. Elementary Algebra. Five credit hours. First semester. Text-book, Venable's. Mr. Preston.

104. Plane Geometry. Five credit hours. Second semester. Text-book, Venable's. Mr. Preston.

121. Trigonometry and Elementary Analytic Geometry. Three credit hours. First semester. Mr. West.

Special emphasis is placed on the solution of triangles and practise in the correct use of tables. Curve plotting and some equations are considered under the head of Analytic Geometry.

Kenyon and Ingold's Trigonometry (without tables) and Hussey's Mathematical Tables are the texts used.

METEOROLOGY

Townshend Hall

PROFESSOR J. WARREN SMITH

101. Elementary Meteorology. Two credit hours. First semester. Text-book, Milham's Meteorology.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

102. Agricultural Meteorology. Two credit hours. Second semester.

Prerequisite, Course 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

CAPTAIN GEORGE L. CONVERSE, U. S. A. (RETIRED)

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, *including so-called special students*, to drill during two years unless excused by the Military and Gymnasium Board. This work is under an officer of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

Equipment

The equipment of the Military Department comprises 1,300 standard U. S. Magazine rifles, with belts, bayonets, and accoutrements, 51 regulation infantry officers' sabres and belts, 25 cadet swords and belts, a stand of regimental colors, with markers, guidons, etc. The target practise equipment comprises six Springfield gallery rifles and seven Winder-Model Winchester gallery rifles, five targets for 100, 200, and 300 yards, and five Winder-Model targets for long range. The band comprises about 60 pieces, partly supplied by the University and partly owned by the members.

The office is equipped for recording the attendance and performance of each cadet in drill, target practise, and classroom work.

Organization

The cadet regiment is organized into four battalions of four companies each, a band, and trumpet corps. Each battalion has its own staff officers. The total number of men under arms averages about 1,400 at present. Service in the band is credited as military service. The appointment of cadet officers during the second year of service is for excellence in their work. These officers may continue to serve during the third and fourth years if they wish, and if they do, are given compensation at the end of each year's, satisfactory service, amounting to not less than twenty-five dollars (\$25.00) for lieutenants, thirty dollars (\$30.00) for captains, and larger sums for officers of higher ranks. Members of the band who volunteer for service after having completed their two years required duty, are also paid at the rate of \$20.00 per year, and receive instructions during the four winter months by a competent band-master.

1. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring) military drill, four months three hours per week (winter) of class-room instruction in drill regulations. Target practise at any open hour during the afternoons of winter months, at 100, 200, and 300 yards. Lecture, one hour weekly by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring), in extended order and guard duty. Four months, three hours per week (winter) of class-room instruction in Articles of War, guard manual, and field service regulations. Target practise at any open hour of the afternoons of the winter months, at 500, 600, and 800 yards.

Caution.—New students are cautioned not to buy uniforms until they have received full instructions from the Commandant of Cadets. Second-hand uniforms must be inspected by the Commandant before purchased.

PHYSICAL EDUCATION

Office, Gymnasium

DR. H. SHINDLE WINGERT, DIRECTOR

Physical Education for men and women is conducted under the direct supervision of the Professor of Physical Education, who is a medical graduate. For the men's work he has two assistants and twenty student aides, who are selected each year from those who show proficiency in their work. For women there is an Associate Professor, who is also a medical graduate, an Instructor, and one paid student assistant.

Aim of the Department. (a) To develop and maintain the health and human efficiency of the student. (b) To extend Physical Education and Hygiene throughout the community and State. (c) To train teachers and leaders in these subjects.

Owing to the over-crowded condition of this department at this time, extension work is impractical. Nearly all the efforts of the department are necessarily confined to the large number of students taking the required work.

Equipment. The Armory and Gymnasium (175 x 120 feet) is used jointly by the Departments of Military Science and Physical Education, also during the winter months by the Department of Athletics. On the ground floor are the officers' room, aides' room, locker room, baths, swimming pool, and a large room (50 x 80 feet) which is used as a gymnasium for the men in the mornings, and for target practise by the Military Department in the afternoons. The second floor contains administrative offices and the main floor of the gymnasium (80 x 150 feet). The gymnasium contains first-class equipment of modern gymnasium apparatus, including a running-track $13\frac{1}{2}$ laps to the mile. The women's section occupies the ground floor of the east end of this building, and contains offices, dressing and locker rooms, baths, and swimming pool. The main floor of the gymnasium is used by the women in the forenoon. In the afternoon, the main floor is used exclusively by the men for class work, athletics, basketball, and recreative games.

The gymnasium is open on alternate evenings to men and women, and for athletic games and contests.

Play Ground. The south end of the campus, containing over 30 acres, affords ample space for all the outdoor recreative games and sports. This large playground is in constant use during the fall and

spring, and all the work of this department that can be conducted outdoors with benefit to the student during those months is given on these grounds.

Medical and Physical Examination. A thorough medical and physical examination is required of all first-year students, at the opening of the freshman year; this includes examination of heart, lungs, eyes, nose, ears, throat, and teeth. Blood pressure, and urinalysis where indicated. A limited number of essential measurements of the body and certain strength tests for men.

When weaknesses or abnormal deviations of form, structure, or function are discovered, suitable corrective exercise, recreation, or treatment is prescribed.

Students found suffering from organic disease are excused from exercises that might prove injurious, and required to secure proper medical advice and treatment.

(A.) FOR MEN

The Gymnasium

PROFESSOR WINGERT, MR. OHLSON, MR. BARTHOLOMEW

1. Physical Education. One credit hour. Two hours per week, the year. Required of all first year students in this college. During the first semester the course consists of one lecture on Personal Hygiene and one period of active physical exercise each week.

(a). Personal Hygiene. Lectures and quizzes on the cause, prevention, and hygienic treatment of the most common preventible diseases and conditions which lower the vitality and interfere with the health and efficiency of the student. Hygiene of the respiratory tract, "colds", and minor diseases of the nose, throat, and tonsils, and tuberculosis. The digestive tract, food values, indigestion, constipation. Hygiene of the eye, eyestrain, venereal diseases, ventilation, clothing, bathing, and the principles of rational work, rest, recreation, and nutrition, etc.

(b) Physical exercise in class: *Corrective*; a graded course of free-hand exercises, stretching, relaxing, stimulating, exercises with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc. *Educative*; graded, progressive exercises on the apparatus and mats, to promote muscular tone, organic vigor, bodily skill, etc. *Recreative*; class dancing, gymnastic and athletic games and contests, giving mental rest, relaxation, and diversion.

(c) During the second semester, two hours a week of active exercise in class is required. An effort is made to develop a "habit of exercise", and those games, sports, and exercises, which the student is most likely to follow in the after college years are encouraged, such as all legitimate types of class and social dancing, swimming, which is compulsory (every man must learn to swim), tennis, clubswinging, fencing, boxing, wrestling, volley ball, and the various group games and contests outdoor and indoor.

Medical Emergency Section

(In The Gymnasium)

This department maintains a medical emergency section open to all students in the department. Emergency medical advice and treatment is furnished free to students while on the campus, during regular University hours.

(B.) FOR WOMEN

Office, The Gymnasium

DR. GOETZ, MISS SAUER, MISS COURTNEY

1. Physical Education. One credit hour. Four hours per week. Required of all women students during first year of attendance at the University. Consists of

(a) Lectures on Personal Hygiene; two hours per week for first eight weeks of first or second semester.

(b) Gymnasium exercises. Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games. Two hours per week for first eight weeks, then four hours per week.

(c) Recreative games and sports, tennis, basket-ball, hiking, swimming, when conducted under proper supervision, may be elected for gymnasium exercises.

2. Physical Education. One credit hour. Four hours per week. Required of all women students after completing Course 1. The course consists of

(a) Gymnasium exercises: marching, tactics, calisthenics, series of exercises with wands, clubs, etc., requiring more skill in execution than those in Course 1. Folk dancing, esthetic dances, and gymnastic games and elementary exercises on apparatus suitable for women.

(b) Recreative games and sports, same as 1 (c.)

PHYSICS

Office, Room 24, Physics Building

PROFESSOR COLE, MR. HEIL

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practise. Other courses in Physics may be elected by four-year students in Agriculture.

108. Forestry Physics. Three credit hours. Second semester. Required in first year course in Forestry. Recitations and laboratory practise.

ROMANCE LANGUAGES AND LITERATURES

Office, Room 305, University Hall

PROFESSORS BOWEN, BRUCE, AND INGRAHAM, ASSISTANT PROFESSORS

HAMILTON AND CHAPIN, MR. BOND, MR. DUNHAM,

MR. DITCHY, MR. MOORE

I. French

101-102. Elementary French. Four credit hours. The year. Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies. Twelve sections. All instructors.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition made to contribute to this end. Sight reading is emphasized.

103-104 Modern French Literature. Four credit hours. The year. Seven sections. Prerequisite, Course 101-102, or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Bond, Mr. Dunham, Mr. Ditchy, Mr. Moore.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practise in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

II. Spanish

101-102. Elementary Spanish. Four credit hours. The year. Grammar: Ingraham-Edgren's, or equivalent, and Ingraham's *Victoria y Otros Cuentos*. Easy prose and plays. Composition and practise in speaking. Six sections. Mr. Ingraham, Mr. Hamilton, Mr. Chapin, Mr. Ditchy, Mr. Moore.

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Course 101-102, or equivalent. Mr. Ingraham or Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practise in speaking continued.

RURAL ECONOMICS

Office, Room 100, Townshend Hall

PROFESSOR PRICE, MR. PHILLIPS

The department includes instruction in farm management, farm accounts, agricultural economics, rural community-life, and history of agriculture.

The facilities offered for the study of farm management include the University farm, containing over five hundred acres, and the records which have been kept of its operations for many years. Adjoining Columbus, and within reach by electric cars, there are many well equipped and well managed farms, which are frequently visited by classes in this department.

For the study of the history of agriculture and agricultural literature, the University Library offers excellent facilities in the large number of agricultural works which it contains and the complete files of agricultural periodicals. In the study of agricultural economics, opportunity is given to study the problems of marketing, distribution, and cooperation at first-hand. Excursions are made within the State to investigate agricultural conditions.

101. Farm Accounts and Records. Two credit hours. First semester. Repeated in second semester. Mr. Phillips.

Lectures and practise work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

102. Farm Management. Four credit hours. Second semester. Two-year course in Agriculture and Horticulture. Mr. Phillips.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a comparative study of the different systems of farm management; the cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands; keeping farm accounts and records.

103. Farm Management. Four credit hours. First semester. Four-year course in Agriculture. Mr. Price.

Lectures and recitations upon the problems of farm management, the relative profits of different systems of farm management, and their effect upon maintaining the fertility of the land. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Prerequisite, Economics 135. Second semester. Mr. Price.

Lectures and recitations upon the production, distribution, transportation, and marketing of agricultural products. The relation of the industry of agriculture to other industries, cooperation in agriculture, agricultural organizations, and the social conditions of agricultural communities are considered.

105. Historical and Comparative Agriculture. Three credit hours. First semester. Mr. Price.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

107-108. Research Work for Graduate Students. Five to ten credit hours. Mr. Price.

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and agricultural economics.

110. Rural Community Life. Three hours. Second semester. Four-year course in agriculture.

Lectures and recitations on rural organizations and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

FOR SHORT COURSE ONLY

51. Farm Accounts and Records. Four credit hours. One term.

The course deals with the fundamental principles of bookkeeping and their application to farm records.

52. Farm Management. Four credit hours. One term.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a study of systems of farm management, the cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. One term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. One term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOP WORK

See Industrial Arts

SPANISH

See Romance Languages

VETERINARY MEDICINE

Office, Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

Students in Agriculture taking required or elective work in Veterinary Medicine, may avail themselves of the whole equipment of the College of Veterinary Medicine. For the class-room work, a large number of papier-mache models, wet and dry anatomical specimens, sample horseshoes, charts, diagrams, and drawings, surgical instruments, and apparatus are constantly employed to supplement textbook teaching. The Clinic Building affords excellent facilities for the care and treatment of diseased and injured animals.

The Veterinary Laboratory building is especially designed for the teaching of Veterinary Medicine. It contains the Anatomical Museum, one of the largest in the country, a modern sanitary dissecting room, and laboratories for pathology, pharmacology, and bacteriology.

151. Agricultural Veterinary Medicine. Three credit hours.
First semester. Mr. White.

The more common sporadic and infectious diseases, minor surgery, castration, horse-shoeing, and soundness are briefly considered in this course.

152, Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

ZOOLOGY AND ENTOMOLOGY

Office, Room 1, Biological Hall

PROFESSORS OSBORN AND LANDACRE, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSOR BARROWS, MR. KOSTIR

Work in this department is largely on the laboratory plan, the effort being to have each student become familiar with typical forms of animal life, and acquire the power to discover facts for himself and use them in practical applications. Animals that have an important economic relation are used as examples for their respective groups. While the aim is to give a thorough and sound training in the underlying principles of zoology and entomology, the practical bearing of these is shown by the use of such forms as the liver fluke of sheep to show effect and relations of parasitism; the earth-worm in its relation to soil formation; trichina as affecting human health and meat exports; insects, both useful and injurious; fishes as a source of food; relation of birds to insect control; and importance of certain groups of birds and mammals as the source of our domestic animals. Advanced and graduate courses provide for training in methods of research, and especial attention is given to preparation for investigation in experiment stations and the government bureaus.

101-102, Elementary Zoology. Three credit hours. First semester, invertebrates to the arthropods. Second semester, arthropods and vertebrates. Mr. Osborn, Mr. Landacre, Mr. Barrows, Mr. Kostir.

This course includes a general discussion of groups, dissection of types, and an outline of classification. Especial attention is given to forms of economic importance either from their detrimental effects on crops, stock, etc., or from their utility in various industries or as domestic species.

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Course 101-102. Mr. Osborn, Mr. Hine, Mr. Kostir.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in Entomology. Preparation of collections, essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

109-110. Systematic and Practical Entomology. Three credit hours. The year. Elective in Short Course in Agriculture. Required in Short Course in Horticulture. First year. Mr. Hine.

111. Parasites of Domestic Animals. One credit hour. First semester. Elective. Mr. Osborn.

A lecture course devoted to the principal parasites affecting domestic animals, intended especially to meet the needs of those who expect to give particular attention to stock raising.

102. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in junior or senior year. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Courses 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological investigators in experiment stations or as teachers in agricultural schools. They may be taken as graduate courses if not elected earlier, or continued as special lines of research during a graduate course embracing other special subjects.)

143-144. Zoological Seminar. One credit hour. The year. Mr. Osborn, Mr. Landacre, Mr. Hine.

Discussion of recent literature in zoology and entomology, reviews of progress in certain lines of investigation and presentation of research studies. Advanced students in zoology and entomology are expected to elect this course, and it is open to others who have had preliminary courses.

129. Quantitative Studies in Variation and Heredity. Two credit hours. First semester. Elective. Recommended for juniors taking agronomy, animal husbandry, or horticulture, and should be taken with Botany 121. Prerequisite, Zoology 101.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practise in measuring, assembling, and analyzing data, and the plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practise in handling and analysis of Mendelian data.

130. Continuation of 129. Including a study of the effects of selection, in-breeding, crossing, and environment, and a study of eugenics. Four credit hours. Second semester. Elective. Prerequisite, Zoology 129.

Half of the semester will be spent in a study of the reactions of animals to external stimuli and the relations of their reactions to the normal activities of the animals and to practical problems.

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn. Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each student of report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn, Mr. Hine. A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of selected group or groups of insects.

149. Medical Entomology. Three credit hours. First semester. Prerequisite, Zoology 101-102, 107-108 or equivalents. Lectures, demonstrations, and recitations upon the insects concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation, and health. Intended to give a general survey of the subject but adapted also for students who expect to enter the medical or veterinary profession or who wish to prepare as teachers or investigators in Medical Zoology.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite one year of Entomology. Lectures, reading, field work,

and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

151-152. Entomology. Insect Control. Three credit hours. First and second semester. Prerequisite, Zoology 101-102, 107-108, 113-114, or equivalent. Technical studies of insect control, utilization of parasitic or predaceous forms. Legislation, quarantine, inspection, insecticides, insecticide machinery, and practical work in fumigation, spraying, etc.

153. Insect Behavior. Two credit hours. First semester. Prerequisite, Zoology 101-102, 107-108. A study of the behavior and reaction of insects and related animals with special reference to their connection with insect control. Mr. Barrows.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry. Mr. Hine.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee—The fee for students who are residents of Ohio and are taking any of the four-year courses, is fifteen dollars a semester. For non-residents, the fee is twenty dollars a semester. Students must reside in Ohio one year before they are eligible under the resident fee. Children of non-resident Alumni pay the same fee as residents of Ohio.

The fee for the Short Courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit—Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee—The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform—The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the

Commandant. Inspection has shown in many cases that second-hand uniforms were unfit to wear and certainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union—A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee—A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board—Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars and twenty five cents to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons, by young men at reasonable rates.

Text-Books—Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee	\$ 30.00
Ohio Union.....	2.00
Gymnasium locker	4.00
Deposits to cover laboratory materials and breakage.	20.00
Uniform	12.00
Books.....	15.00
Board—36 weeks at \$3.50 per week.....	126.00
Room rent, at \$8.00 per month.....	72.00
General expenses.....	100.00
	<hr/>
	\$381.00

The item of general expenses is always subject to the personal habits of the individual, and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform, and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

Women Students—As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed three dollars and a half a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association has come to occupy a prominent place in University life. It has a membership of about six hundred men, and is affiliated with the World's Student Christian Federation.

Religious meetings are held for men on Wednesday evening; there are also frequent meetings for the promotion of social intercourse and good fellowship. Courses in systematic Bible study and in modern missions are offered. A most helpful feature of the work is that in the interest of new students at the opening of the

school year. Desirable rooms and boarding places are found and posted for reference at the Association office. Representatives of the Association meet the trains, assist students in finding satisfactory locations, and endeavor in every way to make them feel at home. The Employment Bureau helps to find work.

A copy of the Students' Handbook, giving information about Columbus, the University, and the various college organizations and activities, will be sent free to prospective students. For this handbook or for further information, address the General Secretary of Y. M. C. A., University Campus, Columbus, Ohio.

The Young Women's Christian Association holds religious meetings regularly at noon on Tuesdays. This organization is active and efficient in working for the higher interests of the young women.

University Pastors

The Methodist Episcopal and the Presbyterian Churches have stationed pastors at the University to serve students of their respective churches and others who may desire it. The local pastors of other denominations also take a sympathetic interest in the students who attend their churches.

SELF-SUPPORT

There is a large amount of work on the University farm and campus and in the gardens, orchards, and greenhouses, which can be done by students, and for which they are paid at current rates for such labor. Each year several thousand dollars are paid out in this way. By this means, together with what can be earned by steady labor during the summer vacation, a considerable number of students defray all their expenses.

Preference is given to students who are willing to devote a certain number of hours each day to the work assigned. Self-support does not relieve students from cadet service. Prospective students are advised to make note of this fact before deciding to enter the University.

Work cannot be promised to all applicants, and is not guaranteed to any.

Applications from men students for employment should be made to the Superintendent of the University farm. Labor blanks will be furnished upon request.

The Dean of Women will advise women students desiring employment. Such students and persons desiring student help, may register with her.

FREE SCHOLARSHIPS

Two types of free scholarships are offered in the College of Agriculture:

(1) Scholarships good for the three-year short courses in agriculture and horticulture.

(2) Scholarships good for four-year courses in the College of Agriculture.

SHORT COURSE SCHOLARSHIPS

Three of these scholarships are assigned to each county in the state. Each scholarship is good for three years, and one becomes available each year.

These scholarships are awarded under rules and regulations of the State Agriculture Commission, as prizes in the Junior Contest work conducted by the commission.

FOUR-YEAR SCHOLARSHIPS

Twenty of these scholarships are assigned to each of the four districts into which the state is divided by the State Superintendent of Public Instruction for the purpose of supervising agricultural instruction given in the public schools.

Each scholarship is good for four years, and five of them become available in each district each year.

These scholarships are awarded to graduates of first and second grade high schools, through a competitive examination in high school agriculture that is held under the supervision of the State Supervisors of Agricultural Education.

VALUE OF SCHOLARSHIPS

The scholarships cover the University incidental fee. In the short courses a student saves \$20 per year, and in the four-year courses, \$30 per year.

For further information concerning these scholarships address the Dean of the College of Agriculture, The Ohio State University, Columbus, Ohio.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given principally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

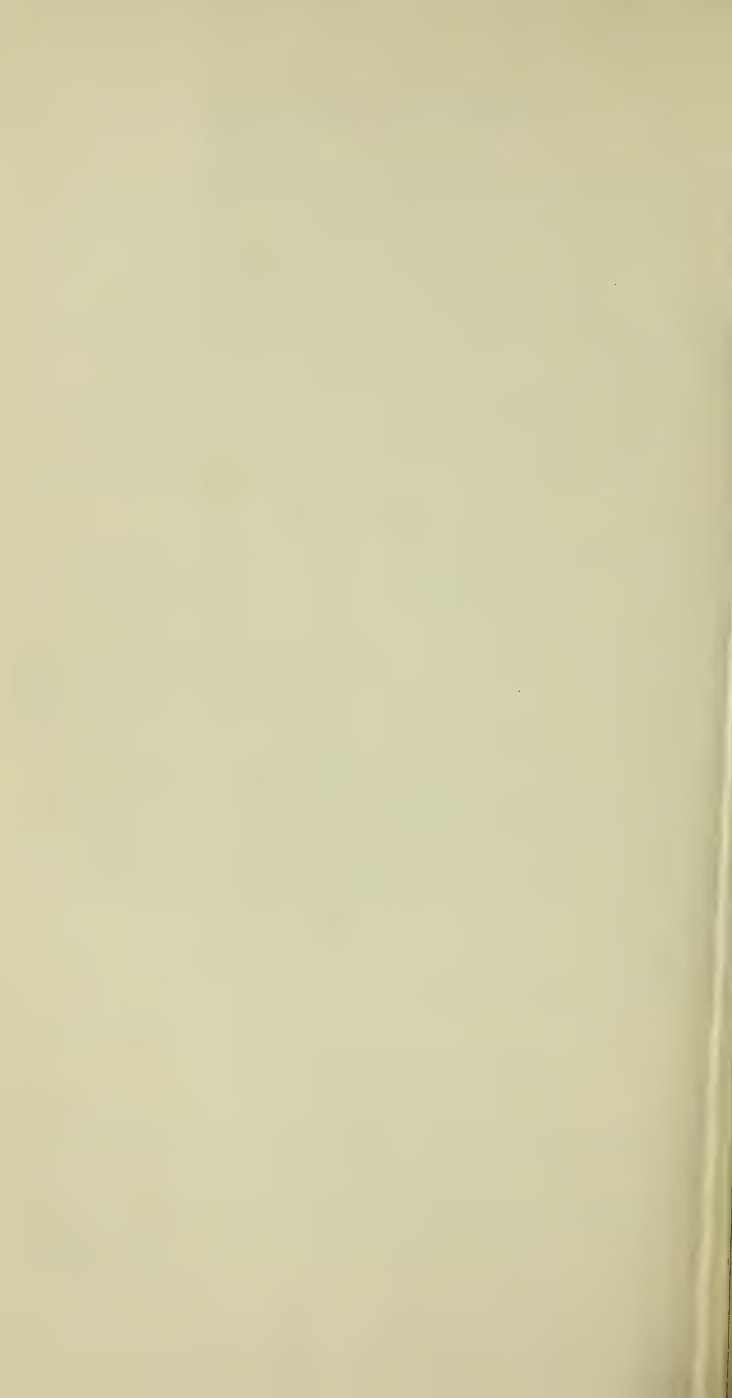
Only three courses are given in a school.

Home Makers' Course. Cooking, Baking, Canning, Home Decoration, and Home Economics.

Only such farm or household practises are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information describing the Agricultural Extension Schools, address the University Editor. For information not contained in this bulletin and for information regarding other forms of Extension work, address the Superintendent of Agricultural Extension, Ohio State University, Columbus.



The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XIX

FEBRUARY, 1915

NUMBER 14

COLLEGE OF AGRICULTURE

1915-1916

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UNIVERSITY CALENDAR

1915

- Entrance examinations, Tuesday to Saturday, June 8 to 12, 8 a. m.
- Summer Session, June 21 to August 13.
- Entrance examinations, Tuesday to Saturday, September 14 to 18, 8 a. m.
- Registration Day, first semester, Tuesday, September 21.
- President's Annual Address, Friday, September 24, 11 a. m.
- Latest date for registration of candidates for a degree at the Commencement of June, 1916, Friday, October 1.
- Registration Day, Three-Year Course in Agriculture, First Term, Monday, October 11.
- Date for mid-semester reports to the Deans concerning delinquent students, Wednesday, November 17.
- Thanksgiving recess begins November 24, 6 p. m., and ends November 30, 8 a. m.
- Christmas recess begins Saturday, December 18, 12 m.

1916

- Christmas recess ends Tuesday, January 4, 8 a. m.
- Registration Day, Three-Year Course in Agriculture, Second Term, Tuesday, January 4.
- Final examinations Thursday, January 27, to Thursday, February 3.
- First semester ends Thursday, February 3, 6 p. m.
- Registration Day, second semester, Tuesday, February 8.
- Washington's Birthday, Tuesday, February 22.
- Close of Second Term, Three-Year Course in Agriculture, Friday, March 17.
- Mid-semester reports to the Deans, Saturday, March 18.
- Easter recess, Thursday, April 20, 6 p. m., to Tuesday, April 25, 8 a. m.
- Memorial Day, Tuesday, May 30.
- Competitive Drill—Cadet Regiment—Saturday, June 3.
- Commencement, Tuesday, June 6.
- Final examinations, Wednesday, June 7, to Wednesday, June 14.
- Entrance examinations, Tuesday, June 20, to Saturday, June 24, 8 a. m.

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COLLEGE OF AGRICULTURE

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Secretary.....VERLE C. SMITH

Office: 100 Townshend Hall—99328

Residence: 422 W. 8th Ave.—16495

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus. It is reached from the Union Station by North High Street or Neil Avenue electric cars.

Organization

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises ten colleges and a graduate school, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Homeopathic
College of Agriculture	Medicine
College of Arts, Philosophy and Science	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
College of Engineering	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1915-16.

[NOTE—The University publishes a bulletin descriptive of each College. Copies may be obtained by addressing L. E. Wolfe, Secretary of the Entrance Board, Columbus, Ohio, and stating the college in which the writer is interested.]

COLLEGE OF AGRICULTURE

The College of Agriculture offers twelve distinct curricula:

Four-Year Curricula: Agriculture, Forestry, Pomology and Vegetable Gardening, Floriculture, Landscape Architecture, Home Economics and Entomology.

Three-Year Curricula: Agriculture and Horticulture.

Winter Courses: Dairying—eight weeks, Agriculture—eight weeks and Poultry Husbandry—eight weeks.

Four-Year Curricula

The four-year curricula of this college are regular collegiate courses of the University and lead to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Horticulture, Bachelor of Science in Forestry, and Bachelor of Science in Home Economics.

Three-Year Curricula

The three-year curricula in Agriculture and Horticulture are adapted especially to the needs and opportunities of farm boys who find it impossible to avail themselves of the four-year course. This course extends through three years of five months each, beginning about October 15, and closing about March 15. The courses are complete in themselves and do not offer preparation for any of the four-year courses.

Winter Courses

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first Monday in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing these courses will be mailed on request.

Extension Courses in Agriculture

Extension Courses in Agriculture are given during the winter months in the various counties of the State. They are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus.

ADMISSION TO THE COURSES LEADING TO A DEGREE

Distribution of Units

To obtain full standing applicants under twenty-one years of age must have credit by examination or certificate for fifteen units, of which two shall be English; two, foreign language (in Home Economics three units of English and four foreign language); two, Mathematics; one, History; and one, Physics, (in Home Economics one in Physics or one in Chemistry.)

Students not presenting these subjects will be required to complete them before graduation.

No student under twenty-one years of age will be admitted to the college if he is conditioned in more than two units. All Entrance conditions must be removed within two years after admission.

For admission by examination or by certificate see the Bulletin of General Information.

Admission to Short Courses

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the Principal or Superintendent of the school last attended, recommending him to the University.

CURRICULA

AGRICULTURE

Degree—Bachelor of Science in Agriculture

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Inorganic			Qualitative		
Zoology	(101)	3	Zoology	(102)	3
Invertebrate			Vertebrate		
English	(101)	2	English	(104)	2
Paragraph Writing			Brief Making		
Animal Husbandry	(101)	4	Animal Husbandry	(102)	4
Cattle and Sheep			Horses and Swine		
Drawing	(125)	2	Geology	(151)	3
Shopwork	(101)	2	Shopwork	(103)	2
Military Drill		1	Military Drill		1
Physical Training		1	Physical Training		1

SECOND YEAR

Geology	(153)	3	Agronomy	(104)	4
Agricultural Chemistry	(103)	5	Agricultural Chemistry	(104)	5
Botany	(101)	4	Botany	(102)	4
Physiology	(101)	3	Physiology	(102)	3
Zoology	(107)	3	Zoology	(108)	3
Entomology			Entomology		
Bibliography	(103)	½	Military Drill		1
Military Drill		1			

THIRD YEAR

Agronomy	(106)	4	Agricultural Engineering	(101)	4
Dairying	(101)	4	Horticulture	(118)	4
Modern Language		4	Modern Language		4
French, German, or Spanish			French, German, or Spanish		
Meteorology	(101)	2			

And one of the following:

First Semester			Second Semester		
Animal Husbandry	(103)	4	Animal Husbandry	(104)	4
Veterinary Medicine	(151)	3	Veterinary Medicine	(152)	3
Forestry (*)		4	Dairying	(102)	4
Zoology	(113)	4	Zoology	(114)	4
Entomology			Entomology		
Bacteriology	(107)	4	Bacteriology	(110 or 112)	4
Agricultural Chem. (*)		4	Agricultural Chem. (*)		4
Botany (*)		3 or 4	Botany (*)		3 or 4
Agronomy	(107)	4	Agricultural Engineering	(106)	3
Animal Husbandry	(105)	3	Animal Husbandry	(106)	4
			Meteorology	(102)	2

FOURTH YEAR

American History	(101)	3	American History	(102)	3
or			or		
Economics	(135)	3	Economics	(136)	3
Rural Economics	(103)	4	Rural Economics	(104)	3
Farm Management			Agricultural Economics		

*Students electing Agricultural Chemistry, Botany, or Forestry in their junior year should consult the department interested regarding the same before being registered.

Elective

Ten hours a week throughout the year from any of the courses given in any of the colleges of the University upon which the student is qualified to enter, except the Colleges of Law, Homeopathic Medicine, Medicine and Dentistry. Two hours a week of this elective work may be devoted to a thesis, subject to the consent of the instructor under whom the thesis is to be written.

FORESTRY**Degree—Bachelor of Science in Forestry****FIRST YEAR**

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Mathematics	(121)	3	Physics	(108)	3
Modern Language	(101)	4	Modern Language	(102)	4
French, German, or Spanish			French, German, or Spanish		
English	(101)	2	English	(104)	2
Engineering Drawing	(123)	2	Forestry	(102)	2
Forestry	(101)	2	Silvics		
Introduction			Botany	(110)	2
Military Drill		1	Dendrology		
Physical Training		1	Military Drill		1
			Physical Training		1

SECOND YEAR

Botany	(101)	4	Botany	(102)	4
Zoology	(155)	3	Botany	(142)	2
Entomology			Dendrology		
Modern Language	(103)	4	Zoology	(156)	3
French, German, or Spanish			Entomology		
Civil Engineering	(121)	6	Modern Language	(104)	4
Surveying			French, German, or Spanish		
Forestry	(103)	2	Geology	(151)	3
History and Relations			Forestry	(104)	3
Military Drill		1	Arboriculture		
			Military Drill		1

THIRD YEAR

Forestry	(105)	3	Forestry	(106)	3
Silviculture			Silviculture		
Botany	(125)	4	Botany	(126)	4
Physiological Ecology			Physiological Ecology		
Agronomy	(123)	2	Forestry	(112)	2
Forest Soils			Forest Craft		
Forestry	(111)	2	Forestry	(116)	4
Protection			Products		
Forestry	(107)	4			
Mensuration					

Elective as follows:

Not less than four hours throughout the year from the following:

First Semester		Second Semester	
*American History	(101) 3	*American History	(102) 3
Agricultural Chem.	(103) 5	Agricultural Chem.	(104) 5
Zoology	(113) 4	Zoology	(114) 4
Engineering Drawing	(137) 2	Engineering Drawing	(138) 2
Economics	(135) 3	Economics	(136) 3
Horticulture	(107) 3	Horticulture	(108) 3
Meteorology	(101) 2		
Botany	(113) 3		

*American history is required of all students who did not have a satisfactory high school course in that subject.

FOURTH YEAR

Forestry	(121) 3	Forestry	(122) 4
Lumbering		Utilization	
Forestry	(123) 4	Forestry	(126) 3
Management		Products	
Botany	(117) 4	Botany	(118) 4
Forest Botany		Forest Botany	
Forestry	(113) 2	Forestry	(114) 2
Economics		Forest Policy	
Forestry	(117) 1	Forestry	(118) 1
Seminar		Seminar	

Not less than three hours throughout the year from any of the courses given in any college of the University upon which the student is qualified to enter.

Unless the candidate for a degree has had a full equivalent, not less than one summer of practical work in the woods is required before graduation.

POMOLOGY AND VEGETABLE GARDENING**Degree—Bachelor of Science in Horticulture****FIRST YEAR**

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Zoology	(101)	3	Zoology	(102)	3
English	(101)	2	English	(104)	2
Horticulture	(101)	4	Horticulture	(120)	4
Drawing	(125)	2	Geology	(151)	3
Shopwork	(101)	2	Shopwork	(103)	2
Military Drill		1	Military Drill		1
Physical Training		1	Physical Training		1

SECOND YEAR

Horticulture	(103)	4	Horticulture	(104)	4
Agr. Chemistry	(103)	5	Agr. Chemistry	(104)	5
Geology	(153)	3	Agronomy	(104)	4
Zoology	(107)	3	Zoology	(108)	3
Botany	(101)	4	Botany	(102)	4
Military Drill		1	Military Drill		1

THIRD YEAR

Horticulture	(105)	4	Horticulture	(106)	4
Modern Language		4	Modern Language		4
Physiology	(101)	3	Physiology	(102)	3
Botany	(125)	4	Botany	(126)	4
Meteorology	(101)	2	Botany	(116)	3

FOURTH YEAR

American History	(101)	3	American History	(102)	3
or			or		
Economics	(135)	3	Economics	(136)	3
Horticulture	(107)	3	Horticulture	(156)	3
Horticulture	(133)	3	Landscape Architecture		
By-Products					

GROUP ELECTIVES

Students specializing in Pomology will elect Pomology group. Those pursuing the course in Vegetable Gardening will elect Vegetable Gardening group.

POMOLOGY

Horticulture	(109)	3	Horticulture	(110)	3
Pomological Experimentation			Pomological Experimentation		
Horticulture	(121)	4	Horticulture	(122)	4
Systematic Pomology			Systematic Pomology		
			Elective		2

VEGETABLE GARDENING

First Semester		Second Semester	
Horticulture	(131) 4	Horticulture	(132) 4
Systematic Vegetable Gardening		Greenhouse Construction	
Horticulture	(109) 3	Horticulture	(110) 3
Gardening Experimentation		Gardening Experimentation	
		Elective	4

FLORICULTURE

Degree—Bachelor of Science in Horticulture

First year only offered 1915-1916

FIRST YEAR

Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Inorganic		Zoology	(102) 3
Zoology	(101) 3	English	(104) 2
Horticulture	(101) 4	Horticulture	(132) 4
English	(101) 2	Greenhouse Construction	
Drawing	(125) 2	Geology	(151) 3
Shopwork	(101) 2	Shopwork	(103) 2
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

Horticulture	(141) 4	Horticulture	(142) 4
Commercial Floriculture		Commercial Floriculture	
Agr. Chemistry	(103) 5	Agr. Chemistry	(104) 5
Geology	(153) 3	Agronomy	(104) 4
Zoology	(107) 3	Zoology	(108) 3
Botany	(101) 4	Botany	(102) 4
Bibliography	(103) ½	Military Drill	1
Military Drill	1		

THIRD YEAR

Horticulture	(145) 3	Horticulture	(156) 3
Garden Flowers		Landscape Architecture	
Modern Language	4	Modern Language	4
Physiology	(101) 3	Physiology	(102) 3
Botany	(125) 4	Horticulture	(162) 3
Meteorology	(101) 2	Plant Materials	
		Elective	2-5

FOURTH YEAR

First Semester		Second Semester	
American History	(101) 3	Horticulture	(108) 3
or		Home Grounds	
Economics	(135) 3	American History	(102) 3
Horticulture	(107) 3	or	
Horticulture	(143) 3	Economics	(136) 3
Floral Design		Horticulture	(144) 3
		Decorative Bedding Plants	

Electives: Seven hours throughout the year

LANDSCAPE ARCHITECTURE

Degree—Bachelor of Science in Horticulture

First year only offered 1915-1916

FIRST YEAR

Mathematics	(121) 3	Physics	(104 or 106) 4
Algebra and Trigonometry		General	
Physics	(103 or 105) 4	English	(104) 2
General		Paragraph Writing	
English	(101) 2	Botany	(110) 2
Paragraph Writing		Dendrology	
Engineering Drawing	(123) 2	Engineering Drawing	(102) 3
Elementary Mechanical		Elementary Mechanical	
Art	(131) 2	Zoology	(156) 3
Elementary Drawing		Entomology	
Zoology	(155) 3	Art	(132) 2
Entomology		Elementary Drawing	
Horticulture	(151) 2	Horticulture	(152) 2
Plant Materials		Plant Materials	
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

Architecture	(103) 2	Horticulture	(154) 3
Order Problems		History of Landscape Arch.	
Engineering Drawing	(107) 3	Modern Language	4
Descriptive Geometry		Botany	(102) 4
Botany	(101) 4	General	
General		Horticulture	(156) 3
Modern Language	4	Landscape Architecture	
Civil Engineering	(121) 6	Art	(141) 2
Plane Surveying		Elementary Design	
Military Drill	1	Military Drill	1

THIRD YEAR

First Semester			Second Semester		
Horticulture	(157)	3	Horticulture	(162)	4
Landscape Design			Plant Materials		
Architecture	(101)	3	Horticulture	(158)	3
History			Landscape Design		
Civil Engineering	(127)	1	Architecture	(102)	3
Sanitary and Water Supply			History		
Economics	(135)	3	Horticulture	(164)	3
Principles			Landscape Surveying		
Horticulture	(101)	4	Economics	(136)	3
Elective	2-4		Principles		
			Art	(136)	2
			Water Color Painting		

FOURTH YEAR

Architecture	(113)	2	Horticulture	(162)	4
Composition			Plant Materials		
Psychology	(101)	3	Botany	(116)	3
General			Plant Pathology		
Horticulture	(165)	3	Horticulture	(160)	4
Civic Design			Advanced Landscape Design		
Horticulture	(159)	4	Horticulture	(170)	3
Advanced Landscape Design			Special Problems		
Horticulture	(169)	3	Horticulture	(166)	3
Special Problems			Landscape Engineering		

APPLIED ENTOMOLOGY

Degree—Bachelor of Science in Entomology

FIRST YEAR

Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Zoology	(101)	3	Zoology	(102)	3
Modern Language	(101)	4	Modern Language	(102)	4
English	(101)	2	English	(104)	2
Art	(135)	2	Art	(136)	2
Meteorology	(101)	2	Botany	(110)	2
Military Drill		1	Military Drill		1
Physical Training		1	Physical Training		1

SECOND YEAR

Botany	(101)	4	Botany	(102)	4
Zoology	(107)	3	Zoology	(108)	3
Entomology			Entomology		
Modern Language	(103)	4	Modern Language	(104)	4
Horticulture	(101)	4	Horticulture	(120)	4
Agricultural Chemistry	(113)	2	Geology	(151)	3
Chemistry of Insecticides			Military Drill		1
Bibliography	(103)	½			
Military Drill		1			

THIRD YEAR

First Semester		Second Semester	
Zoology	(113) 4	Zoology	(114) 4
Entomology	2	Botany	(116) 3
Agronomy	(106) 4	Agronomy	(111) 3
Bacteriology	(107) 4	Bacteriology	(108) 4
Elective	2-3	Architecture	(111) 2
		Elective	2-3

FOURTH YEAR

American History	(101) 3	American History	(102) 3
or		or	
Economics	(135) 3	Economics	(136) 3
Entomology—Medical	3	Zoology	(112) 3
Entomological Literature	2	Apiculture of Forest	
Entomology—Legislation, In-		Entomology	3
spection, Quarantine	3	Entomology—Taxonomy	2
Elective	5-6	Entomology	3
		Insecticides, Insecticide ma-	
		chinery and insect control	
		Elective	6-7

NOTE—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, other practical work in Entomology is required before graduation.

HOME ECONOMICS

Degree—Bachelor of Science in Home Economics

FIRST YEAR

Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Art	(119) 1	English	(104) 2
English	(101) 2	Zoology	(102) 3
Zoology	(101) 3	or	
or		Botany	(102) 4
Botany	(101) 4	Modern Language	(102) 4
Modern Language	(101) 4	French or German	
French or German		Home Economics	(112) 2
Home Economics	(111) 2	Textiles	
Textiles		Physical Training	1
Physical Training	1		

SECOND YEAR

Chemistry	(127) 4	Agricultural Chemistry	(123) 5
Organic		Home Economics	(102) 5
Home Economics	(101) 5	Physiology	(102) 3
Physiology	(101) 3	Modern Language	(104) 4
Modern Language	(103) 4	French or German	
French or German		Engineering Drawing	(128) 1½
Engineering Drawing	(127) 1½	Physical Training	1
Bibliography	(103) ½		
Physical Training	1		

THIRD YEAR

First Semester		Second Semester	
Economics	(135) 3	Art	(141) 2
Bacteriology	(107) 4	Economics	(136) 3
Agricultural Chem.	(124) 4 or 5	Home Economics	(104) 3
Art	(131) 2	Home Economics	(118) 3
		Home Economics	(110) 4
Elective to make fifteen hours			

FOURTH YEAR

Sociology	(101) 3	Sociology	(102) 3
Home Economics	(105) 2	Home Economics	(106) 3 to 5
Home Economics	(119) 3		
Elective to make fifteen hours. Elective courses offered in the Department.			
Home Economics	(108) 2	Home Economics	(116) 3
Home Economics	(113) 3	Home Economics	(109) 2
		Home Economics	(121) 3

Electives for the course must include not less than three hours of English through the year, and for students not offering entrance credit in American History, three hours of American History through the year.

A course in Poultry Husbandry is offered for students in Home Economics by the Animal Husbandry department—See Animal Husbandry 121.

Students in the College of Agriculture may elect the courses in Biblical Literature and Historical Christianity taught by Miss Breyfogle.

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are co-operative between the University and other colleges of the State, and become effective when arrangements satisfactory to both schools

can be made. Under the agreement the first three years are spent in the co-operating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. at the end of the fifth year, he receives the degree of Bachelor of Science in Agriculture, B. Sc. (Agr.), from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capitol University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of The Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science in Agriculture at the end of five years.

FIRST YEAR

First Semester		Second Semester	
English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Zoology	(101) 3	Zoology	(102) 3
American, European or Industrial History	3	American, European or Industrial History	3
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

English	(131) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 4	Botany	(102) 4
Engineering Drawing	(125) 2	Art	2
Modern Language	4	Modern Language	4
Military Drill	1	Military Drill	1

THIRD YEAR

First Semester			Second Semester		
Economics	(135)	3	Economics	(136)	3
Physics	(103)	4	Physics	(104)	4
Geology		3	Geology		3

Elective 6 or 7 hours the year on approval of Adviser.

FOURTH YEAR

Animal Husbandry	4	Choice of any two of these the	
Agricultural Chemistry	4	fourth year. Remaining two the	
Rural Economics	4	fifth year.	
Agronomy	4		

In addition to the two selected at least ten hours to be elected with approval of the Adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Zoology	(101)	3	Zoology	(102)	3
American, European or			American, European or		
Industrial History		3	Industrial History		3
Military Drill		1	Military Drill		1
Physical Training		1	Physical Training		1

SECOND YEAR

English	(131)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	4	Botany	(102)	4
Engineering Drawing	(125)	2	Art	(131)	2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(135)	3	Economics	(136)	3
Physics	(103 or 105)	4	Physics	(104 or 106)	4
Geology	(103)	3	Geology	(104)	3
Zoology	(107)	3	Zoology	(108)	3
or			or		
Botany	(125)	4	Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.

THE OHIO STATE UNIVERSITY

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year.)
Agricultural Chemistry (4 hours throughout the year.)

In addition to these six hours elective throughout the year, with the approval of the Department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the Department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Zoology	(107 and 108)	3
Rural Economics	(103 and 104)	4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the Junior year a choice of either Zoology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	4	Botany	(102)	4
Physical Training		1	Physical Training		1

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	5
Physiology	(101)	3	Physiology	(102)	3
French or German		4	French or German		4
Art	(119)	1	Home Economics	(112)	2
Home Economics	(111)	2	Textiles		
Textiles			Engineering Drawing	(128)	1½
Engineering Drawing	(127)	1½	Physical Training		1
Physical Training		1			

THIRD YEAR

First Semester

Economics	(135)	3
Home Economics	(101)	5
Foods		
Bacteriology	(107)	3
English	(131)	3
Art	(131)	2

Second Semester

Economics	(136)	3
Home Economics	(102)	5
Foods		
Home Economics	(104)	3
Sanitation		
English	(133)	3
Art	(141)	2

FOURTH YEAR

Agricultural Chemistry	(124)	4
Psychology	(101)	3
Sociology	(101)	3
Home Economics	(118)	3
House Decoration		
Elective		3

Home Economics	(110)	4
Dietetics		
Psychology	(102)	3
Sociology	(102)	3
Home Economics	(119)	3
House Decoration		
Elective		3

FIFTH YEAR

Home Economics	(105)	3
Seminar		
History of Education	(101)	3
Elective		9

Home Economics	(106)	3
Seminar		
History of Education	(102)	3
Elective		9

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3), 108 (2), 109 (2).

Sociology 107 (3), 120 (3).

Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).

Chemistry 151-152, 153-154.

Philosophy 115 (2)—116 (2).

Greek 115 (2)—116 (2).

Physiology 104 (3).

SHORT COURSES

The three-year courses in Agriculture and Horticulture are adapted especially to the needs and opportunities of farm boys who find it impossible to avail themselves of the four-year course. This course extends through three years of five months each, beginning about October 15, and closing about March 15. **The courses are complete in themselves and do not offer preparation for any of the four-year courses.**

THREE-YEAR AGRICULTURE

FIRST YEAR

First Term		Second Term	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Agronomy	(51) 4	Agronomy	(52) 4
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Agr. Engineering	(51) 4	Dairying	(52) 3
English	(91) 3	English	(92) 3
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

Horticulture	(53) 4	Horticulture	(54) 4
Agronomy	(53) 4	Agronomy	(54) 4
Agr. Chemistry	(53) 4	Animal Husbandry	(54) 4
Dairying	(53) 3	Shopwork	(52) 3
Shopwork	(51) 3	Agr. Engineering	(52) 4
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

THIRD YEAR

Rural Economics	(51) 4	Rural Economics	(52) 4
Forestry	(51) 4	Agr. Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of two from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Zoology	(52) 4
Agr. Engineering	(53) 4	Dairying	(56) 4
Animal Husbandry	(59) 4	Horticulture	(58) 4
Botany	(91) 4	Horticulture	(60) 4
Rural Economics	(53) 4	Rural Economics	(54) 4
Horticulture	(57) 4		

THREE-YEAR HORTICULTURE**FIRST YEAR**

First Term		Second Term	
Agr. Chemistry	(51) 4	Agr. Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Zoology	(91) 4	Zoology	(92) 4
Entomology		Entomology	
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 3	English	(92) 3
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

Agronomy	(53) 4	Agronomy	(54) 4
Shopwork	(51) 3	Shopwork	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1
Elective	3-4	Elective	3-4

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Forestry	(51) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	7-8	Elective	7-8

ELECTIVE

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Poultry		Poultry	
Bacteriology	(51) 4	Dairying	(56) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(65) 4	Horticulture	(66) 4
Horticulture	(59) 4	Dairying	(58) 4
Dairying	(57) 4	Horticulture	(64) 4
		Horticulture	(62) 4

WINTER COURSES**AGRICULTURE**

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for

them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

DAIRYING

The course in Dairying is divided into two four-weeks courses. The first one, "Farm Dairying and Advanced Registry course," beginning January 3, 1916, and ending January 29, 1916, will be given to meet the demand for those who wish to receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufactures" begins January 31, 1916 and ends February 26, 1916. This course has been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter, cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this Department and is given at a time of the year when the buttermakers, cheese-makers, ice cream-makers and milk men can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

Those who are interested are requested to write to the Secretary of the Entrance Board for the special announcements describing these courses.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY

Townshend Hall

PROFESSORS VIVIAN, LYMAN, MR. PHILLIPS, MR. SALTER,
MR. HUTCHINSON

103-104. General Agricultural Chemistry. Five credit hours. The year. Four-year courses in Agriculture, Horticulture, and Forestry. Prerequisite, Chemistry 106 or 110. Mr. Vivian, Mr. Phillips and assistants.

Three lectures and two laboratory periods per week. Lectures on chemistry as applied to agriculture, including the following topics: Food requirements of plants, sources of plant food, soil exhaustion and amelioration, barnyard manure and commercial fertilizers, composition of feeding stuffs and dairy products. Laboratory work consists of a brief introduction to quantitative analysis, gravimetric and volumetric, followed by the analysis of fertilizers, feeding stuffs, and dairy products.

105-106. Advanced Agricultural Analysis. Five credit hours. The year. Prerequisite, Agricultural Chemistry 103-104. Mr. Vivian, Mr. Phillips.

The work of this course consists of a detailed study of the official methods of determining nitrogen, potash, phosphoric acid; the complete analysis of grains and feeding stuffs, milk, butter, and cheese. Intended for students desiring to specialize in agricultural chemistry.

113. Chemistry of Insecticides and Fungicides. Two credit hours. First semester. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

Lectures and recitations on the materials used as insecticides and fungicides; their preparation and properties.

123-124. Household Chemistry. Four or five credit hours. The year. Home Economics, second year, second semester; third year, first semester. Prerequisite, Chemistry 106 or 110. Mr. Lyman, Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed

by the analysis of foods and other materials of household interest.

For Advanced Undergraduates and Graduates

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103-104. Mr. Vivian.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

109-110. Chemistry of Soils. Three to five credit hours. The year. For students specializing in agronomy. Prerequisite, Agricultural Chemistry 103-104. Mr. Vivian.

Lectures and laboratory work on the chemical composition of the soil, using the official method of analysis of soils, and the various methods suggested by the U. S. Department of Agriculture; testing needs of soil for application of commercial fertilizers.

111-112. Chemistry of Animal Nutrition. Three to five credit hours. The year. Prerequisites, Agricultural Chemistry 103-104 or equivalent. Mr. Vivian.

For students specializing in animal husbandry.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103-104 or an equivalent preparation in quantitative analysis. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit

hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats, and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. Either term. Short Courses in Agriculture and Horticulture.

Lectures, recitations, and demonstrations on chemical elements concerned in plant growth. Ingredients of plants, essential and non-essential; sources of plant food, air, and soil. Nature of soil and plant food; soil exhaustion and amelioration; farm manures sources, composition and preservation; commercial fertilizers, their rational use; lime and other soil amendments.

53. Chemistry of Plants. Four credit hours. First term. Prerequisite, Agricultural Chemistry 51 or equivalent.

Composition of plants, ash, protein, fat, carbohydrates, fiber. Changes in plant growth. Factors affecting composition; chemical changes involved in preparation and preservation of foods. Feeding standards and nutritive ratio.

AGRICULTURAL EDUCATION

(See School Administration)

Office, West Basement University Hall

ASSISTANT PROFESSOR BRICKER

AGRICULTURAL ENGINEERING

Office, 201 Horticulture and Forestry Building

PROFESSOR RAMSOWER, ASSISTANT PROFESSOR IVES

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125. Mr. Ramsower.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

Formerly Agronomy 101.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same. Formerly Agronomy 121.

106. Drainage. Three credit hours. Second semester. Mr. Ramsower, Mr. Ives.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth, and distance apart; (c) roads; history of road building, kinds of roads, their construction and cost. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit. Formerly Agronomy 102.

110. Advanced Farm Machinery. Two credit hours. Second semester. Prerequisite, Agricultural Engineering 101. Mr. Ramsower, Mr. Ives.

A detailed study of the construction of farm machinery. Expert work in assembling and testing grain binders, corn harvesters, mowers, etc. Efficiency tests of gasoline and steam engines. Formerly Agronomy 114.

107. Farm Power. Three credit hours. First semester. Mr. Ramsower, Mr. Ives.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, steam engines, windmills and electric power.

108. Concrete Construction. Three credit hours. Second semester. Mr. Ives.

Lectures and laboratory covering the making of forms, simple tests of concreting materials, proportioning materials for different purposes, mixing and placing, laying walks and floors, reinforcement, etc. Written reports will be required for each day's laboratory work.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering (a) laying out the farm and locating the buildings; (b) construction of farm buildings, building materials, ventilation, painting, etc.; (c) designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; (d) concrete and its uses.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

54. Farm Power. Four credit hours. Second term. Mr. Ives.

A study of power on the farm, including gasoline, oil, and steam engines, windmills, water supply and lighting systems.

53. Drainage. Three credit hours. First term. Elective. Mr. Ramsower.

Lectures and laboratory covering the detailed cost of drainage systems, size of tile, use of level, etc.

AGRONOMY

Office, 108 Townshend Hall

PROFESSOR M'CALL, ASSISTANT PROFESSOR LIVINGSTON, MR.
STEMPLE AND ASSISTANTS

104. Elementary Soils. Four credit hours. Second semester. Prerequisite, Geology, 151 or 153. Four-year courses in Agriculture and Horticulture. Mr. McCall.

Lecture and recitations on the origin, formation, and kinds of soils, their chemical and physical composition, and improvement, by cultivation, fertilization, drainage, and irrigation. Laboratory studies of the physical properties of soils, and the factors which control soil fertility.

106. Field Crop Production. Four credit hours. Either semester. Prerequisite, Botany 101 or its equivalent. Mr. Livingston.

A study of the history, adaptation, distribution, and classification of the cereal crops, and the cultivation, harvesting, and marketing of the same throughout the great agricultural sections of the world, with special attention given to Ohio conditions.

109. Cereal Crop Production. Two or three credit hours. First semester. Prerequisite, Agronomy 106. Mr. Livingston.

Discussion of subjects, relating to cereal crop production. Laboratory practice in judging and grading of cereals, classification of varieties, manufactured products, physiological and cultural experiments.

111. Forage Crop Production. Two or three credit hours. Second semester. Prerequisite, Agronomy 106. Mr. Livingston.

Continuation of Agronomy 109, in which the forage crops are discussed, with laboratory practice in classification of varieties and seed standardization.

123. Forest Soils. Two credit hours. First semester. Forestry. Prerequisite, Geology 151 or equivalent. Mr. McCall.

A brief study of the topography, drainage, soils, and climatic features of the United States. The work is arranged with special reference to the needs of students in Forestry.

For Advanced Undergraduates and Graduates

107. Advanced Soils. Four credit hours. First semester. Prerequisite, Agronomy 104 or 105. Mr. McCall.

Lectures on (a) general character and the distribution of the more important soil types of the United States and their adaptability to crops, (b) the factors underlying soil fertility, with special reference to the effect of different methods of cultivation and cropping. The lectures will be supplemented by field trips for the identification and mapping of soil types and by laboratory work, which will include the mechanical analysis of soils and a study of their physical behavior.

110. Agricultural Experimentation. Three credit hours. Second semester. Mr. McCall.

Lectures upon history and development of experiment stations, methods and character of station work, and the interpretation of experimental results. Seminars devoted to critical study of experiment station literature, and to the methods of experimentation.

113. Field Crop Improvement. Three credit hours. Second semester. Prerequisite, Agronomy 106. Mr. Livingston.

A study of the principles involved and the methods used in the improvement of field crops.

For graduate work in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY**Farm Crops**

51-52. Crop Production. Four credit hours The year. Mr. Livingston.

The first half of the year will be devoted to the study of corn and the small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include : (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and the care of the seed, the preparation of the seed-bed, cultural methods and the harvesting of the crop. The laboratory work is planned to give the student training in the classification of the different crops, the

identification of noxious weeds, and the selection of corn and small grains for show and seed purpose.

The work is planned with special reference to Ohio conditions.

53-54. Soil Management. Four credit hours. The year. Mr. McCall.

A brief account of the origin of the soil and its physical and chemical composition, followed by a detailed study of management of the soil with reference to the maintenance of the productive capacity of Ohio farms. The attention of the student is directed to the necessity of making a study of his own soil for the purpose of determining the factors which are limiting his crop production. Cultural methods are discussed with special reference to the preparation of the seed-bed and the use of farm manures and commercial fertilizers.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS KNIGHT, HOCKETT, ASSISTANT PROFESSOR SCHLESINGER, MR. BACOT

101-102. History of the United States (1763-1912). Three credit hours. The year. Mr. Hockett, Mr. Schlesinger, Mr. Bacot.

American History 101 is given also the second semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1912. Text-book, discussion, and collateral readings.

ANIMAL HUSBANDRY

Judging Pavilion

PROFESSORS PLUMB, KAYS, ASSISTANT PROFESSORS JACOBY, GUSLER, COFFEY

101. Types and Classes of Cattle and Sheep. Four credit hours. First semester. Mr. Gusler.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of

the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Mr. Gusler.

A discussion of the various types, classes, and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Mr. Kays.

Lectures, text-books, and recitations upon the history, development, characteristics, and adaptation of types and breeds of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Mr. Kays.

Covers the subject of cattle and swine on the same basis as Animal Husbandry 103.

105. Feeding Animals. Three credit hours. First semester. Mr. Vivian, Mr. Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs, and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations, in studying rations in practical use in the community, and suggesting improvements, if desirable. The economy of the subject is carefully considered. Mr. Vivian has charge of the class the first part of the semester on the subject of the chemistry of foods and nutrition, Mr. Plumb taking the second half of the semester in a discussion of practical feeding problems.

116. Dairy Cattle. Four credit hours. Second semester. Mr. Plumb.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases, and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. Prerequisite, Animal Husbandry 117-118.

One lecture and one discussion period a week. A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern States, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Practice work in feeding and caring for a flock of fowls for one month to be assigned. Mr. Jacoby.

Each student will be required to visit the poultry plant morning, noon, and afternoon to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. A series of lectures for students in home economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon, and afternoon.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Mr. Plumb.

Lectures and seminar on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practice in shearing is required.

106. Principles of Breeding. Four credit hours. Second semester. Mr. Kays.

Lectures, text-books, and recitations upon the subject of heredity from various points of view in its application to breeding farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction and working out problems in heredity from herd books. Students taking this course should have had either Animal Husbandry 103 or 104, and Zoology 101-102.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Mr. Plumb, Mr. Kays.

This is an advanced class for students who have already had the work of the junior year in Animal Husbandry 103 and 104. The purpose is to give a more detailed consideration to type and breed conformation, with an emphasis on practice in judging groups and classes and rendering required reasons therefore. Only students who have generally covered certain necessary judging work are expected to take this course.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period. This course should be preceded by Animal Husbandry 105 and 106. Mr. Kays.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep, and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool, and pork.

109. Horse Training, Harness and Vehicles. Two credit hours. First semester. Mr. Kays.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle, and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. One credit hour. Second semester. Mr. Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. Second semester. Mr. Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practice of the live stock markets and yards, the market classification and grading, the export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market developments. Visits are also made to stock yards, transportation agencies, packing houses, etc.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Third year. Elective. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

For graduate courses in this department see the **Bulletin of the Graduate School.**

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours per week, both score card and comparative judging being used.

54. Feeding. Three credit hours. Second term. Second year.

A study of the principles of nutrition, character, and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51 and 52.

This is a course for the short course men who have had the work of the first year in Types and Breeds of Farm Animals.

53. Dairy Cattle. Four credit hours. First term.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

57-58. Live Stock Management. Four credit hours.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year.
Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: Breeds and breeding, feeding, housing, marketing, natural and artificial incubation, and brooding and poultry diseases.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE, MR. HOSKINS

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours per week. Prerequisite, Zoology 101-102 or Physiology 101-102 or an equivalent. Mr. Landacre, Mr. Hoskins.

Fishes, amphibians and reptiles.

Formerly Zoology 103.

102. Comparative Anatomy of the Vertebrates. Three to five credit hours. Second semester. One recitation and five to eight laboratory hours per week. Required of students in the Arts-Medicine and Science-Medicine courses. Prerequisite, Anatomy 101, Physiology 101 or Zoology 101 or an equivalent. Mr. Landacre, Mr. Hoskins.

Birds and mammals.

Formerly Zoology 104.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours per week. Prerequisite, Anatomy 101-102 or an equivalent. Mr. Landacre.

Karyokinesis and the early development of fishes, amphibians and reptiles.

Formerly Zoology 125.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight

laboratory hours per week. Prerequisite, Anatomy 101-102 or an equivalent. Mr. Landacre.

The development of birds and mammals.

Formerly Zoology 126.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours per week. Prerequisite, Zoology 101-102 or Physiology 101-102, or an equivalent. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

Formerly Zoology 119.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours per week. Prerequisite, Zoology 101-102 or Physiology 101-102, or an equivalent. Mr. Landacre.

The histology and early development of the frog.

Formerly Zoology 120.

For graduate courses in this department see the Bulletin of the Graduate School.

ART

Office, 203 Hayes Hall

ASSISTANT PROFESSOR KELLEY, MISS ROBINSON, MISS
SHEPHERD, MR. NORRIS

131-132. Elementary Drawing. Two credit hours. The year.

This course is designed to develop a thorough knowledge of form and values in black and white, also the use of free-hand perspective. Two two-hour periods.

133. Advanced Drawing. Two credit hours. First semester. Prerequisite, Art 131-132.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model. Two two-hour periods.

136. Water Color Painting. Two credit hours. Second semester. Prerequisites, Art 133 and 141.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student. Two two-hour periods.

141. Elementary Design. Two credit hours. Second semester. Prerequisites, Art 131 and 119.

The principles of the theory and practice of design. Lecture and conference, with outside work.

119. Appreciation of Art. One credit hour. First semester.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject. One lecture.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131, 141. Miss Shepherd.

Art in design; the direct application of design principles and color harmony to dress.

ARCHITECTURE.

Office, 100 Brown Hall

PROFESSORS BRADFORD AND CHUBB

101-102. History of Architecture. Three credit hours. The year. Lectures illustrated by lantern slides. Mr. Chubb.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSOR MORREY, ASSISTANT PROFESSOR STARIN, MR.
FRONING AND LABORATORY ASSISTANTS

For Advanced Undergraduates and Graduates

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mr. Froning, Miss McCoy, and laboratory assistants.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mr. Froning, Miss McCoy.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology, 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110, or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112, or equivalents. Mr. Morrey.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLICAL LITERATURE, HISTORY, AND EXEGESIS

Office, 103 Orton Hall

PROFESSOR BREYFOGLE

***101 Biblical Literature.** Three credit hours. First semester. Lectures, quiz, and reports. Miss Breyfogle.

A consideration of the literature, history, and religion of the Old Testament.

This is a general course touching upon the historical crises of the Old Testament with an attempt to recreate the political, economic, and social conditions as a basis for the better understanding of the moral and religious teachings. A stereopticon will be used, showing the latest discoveries in Palestine, Egypt, and Assyria.

***102. Historical Christianity in Outline.** Three credit hours. Second semester. Miss Breyfogle.

A consideration of Judaism, of the life, work, and teachings of the Founder of Christianity, and of Apostolic teaching.

*Not given in 1915-1916.

This course is intended to give the student a systematic knowledge of the New Testament in its historical setting. It will consider the relation of Christianity to Hellenic Judaism, the teachings of Jesus as shown by a comparison of the gospels, and the expansion of Christianity throughout the world during the Apostolic times. Stereopticon views will be freely used and endeavor made to familiarize the student with the text.

103-104. The History of Religion in Outline. Three credit hours. The year. Lectures, quiz, and reports. Miss Breyfogle. A consideration of the great book religions of the world.

BIBLIOGRAPHY

Office, the Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

A required course for students in the College of Agriculture. This course consists of lectures and problems on the use of reference books, indexes, catalogues, and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSOR SCHAFFNER, ASSISTANT PROFESSORS GRIGGS, DETMERS, STOVER AND DEPARTMENT ASSISTANTS

101-102. General Botany. Four credit hours. The year. Mr. Schaffner, Mr. Griggs, Miss Detmers, Mr. Stover.

Text-books, Curtis's *Nature and Development of Plants* (3rd edition), Schaffner's *Laboratory Outlines for General Botany* (3d edition).

A general survey of the plant kingdom by the comparative method of morphological types and life cycles. A general view of the morphology, evolution, and classification of plants from the lowest to the highest.

107. Plant Histology. Two credit hours. First semester. Prerequisite, Botany 101-102, or equivalent. Miss Detmers.

110. General Dendrology. Two credit hours. Second semester. Mr. Schaffner, Mr. Brown.

Text-book, Schaffner's Field Manual of Trees.

A study of trees and shrubs, with practice in the identification of woody plants, in both summer and winter condition. Students are required to prepare a dendrological herbarium.

112. Elementary Botany. Four credit hours. Second semester. Miss Detmers.

Text-books, Bergen and Caldwell's Practical Botany and Kellerman's Spring Flora (new edition).

This is a general elementary course, consisting mostly of organography, plant physiology, and a study of the native flora, but some instruction is also given in ecology and classification and the economic phases of the subject. The students are required to do work in the field both in observation and collecting.

This course cannot be used for University credit.

113. Morphology of the Higher Fungi. Three credit hours. First semester. One lecture and two laboratory periods. Prerequisite, Botany 101-102. Mr. Stover.

A study of the fungous flora, both fleshy and woody forms, with special reference to edible and poisonous mushrooms and to the wood-destroying species.

116. Plant Pathology. Three credit hours. Second semester. Lecture and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Stover.

Text-book, Stevens and Hall, Diseases of Economic Plants.

The diseases of plants due to physical causes and animals are briefly considered, but the main part of the course is devoted to a study of the parasitic fungi most destructive to cultivated plants.

117-118. Forest Ecology. Four credit hours. The year. Lecture and laboratory. Prerequisite, Botany 101-102, or equivalent.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102, or equivalent.

An experimental study of the soil, air, and biotic relations of plants, with training and instruction in such phases of nutrition, growth, movement, and the tropisms of plants as

have practical bearing on agriculture, forestry, and general biology.

121. Plant Genetics. Three credit hours. First semester. Lecture and laboratory. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, fluctuations, and mutations, together with methods of procedure in crossing both lower and higher plants. Emphasis is placed on heredity in wheat and corn. Students electing this course should also take Zoology 129.

For Advanced Undergraduates and Graduates

127-128. General Plant Pathology. Four credit hours. The year. Laboratory and field work. Prerequisite, Botany 101-102, or equivalent. Mr. Griggs.

Text-books: Stevens' Fungi and Stevens and Hall's Diseases of Plants.

142. Dendrology of Conifers. Two credit hours. Second semester. Prerequisite, Botany 101-102. Mr. Schaffner.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON, EVANS, ASSISTANT PROFESSOR
BOORD, MR. HUMMELL, MR. DAY, MR. SCHMIDT, MR.
PARKINSON, MR. McNEIL, MR. McCROSKY,
AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, Mr. McNeil, Mr. Parkinson.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Hummell, Mr. McNeil, Mr. Parkinson.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, Mr. Schmidt, Mr. McCrosky, Mr. Day.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105, and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Hummell, Mr. Schmidt, Mr. McCrosky, Mr. Day.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures, one quiz. Prerequisite, an acceptable course in general chemistry. Mr. McPherson, Mr. Boord.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year.

Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours per week. Laboratory open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord.

The preparation of typical organic compounds.

For graduate courses in this department see the Bulletin of the Graduate School.

CIVIL ENGINEERING

Office, 107 Brown Hall

PROFESSOR ENO, MR. NEILSON, MR. KILMER

121. Surveying and Topographic Drawing. Six credit hours. First semester. Forestry and Landscape Architecture, second year. Prerequisite, Mathematics 114 or 132, and Engineering Drawing 101. Mr. Neilson, Mr. Kilmer.

The work will be divided into lectures, recitations, field work, computing, and drawing in such manner as the schedule and weather will permit.

***127. Sanitary and Water Supply Engineering.** One credit hour. First semester. Landscape Architecture, third year. Prerequisite, Civil Engineering 121. Mr. Eno.

One lecture per week on public and private sanitation the first half of semester and on public and private water supplies the last half of semester.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSORS CUNNINGHAM,
CLEVINGER, STOLZ

101. Principles of Dairying. Four credit hours. First semester. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures are given on secretion of milk and the testing of milk and cream for butter fat; feeding and caring for dairy cows as related to the economical production of milk; forma-

*Not given in 1915-1916.

tion of profitable herds; testing individual cows and herds for butter fat production, and entering and testing cows for the Advanced Registries. In the laboratory, practical work will be given in testing milk and cream for butter fat, testing dairy herds for butter fat production, the practice of operating farm cream separators, the care of milk and cream, buttermaking, and cheesemaking, also plumbing and soldering as needed in dairy operations.

102. Farm Dairying. Four credit hours. Second semester. Mr. Erf.

Lectures will be given on the planning and equipping of dairy barns, milk houses, dairy plants, farm milk houses, refrigerators, and arranging of yards. Lectures will also be given on the handling and manufacturing of farm dairy products for the market, dairy farm management, and a study of the comparison of the different systems under various conditions. The laboratory work will consist of designing dairy barns, dairy plants, dairy houses, refrigerators, etc., the setting up and operating of dairy machinery, scoring dairy farms and dairy plants.

103. City Milk Supply. Two to four credit hours. Either semester. Mr. Cunningham.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Four credit hours. Either semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of Cheddar, Swiss, Brick, Limburger,

Club, Cream, Neufchatel, Cottage, Pimento, and Camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice Cream Making and Milk Condensing. Five credit hours. Second semester. Mr. Erf, Mr. Cunningham.

Lectures will be given on the theory of milk condensation and ice cream making. Practical work with the vacuum pans and sterilizers will be given in the condensing laboratory and practical work in ice-cream making in the ice-cream laboratory.

111. Dairy Mechanics. Three credit hours. First semester. Mr. Clevenger.

This work consists of one-hour lectures and three-hour laboratory periods. It treats of the construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, hanging of shafting and pulleys, pipe fitting and soldering, and the operation of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Three credit hours. The year. Mr. Erf.

Three lines of work are offered in this course. (1) Economic dairying. This consists of visiting ten dairy farms and determining the profit or loss on these farms. A complete description of the farms is expected and suggested as to improvements in methods used. (2) Investigational work. This consists in working out some practical problem along dairy lines, and when work is done in the laboratory a fee will be charged. (3) Seminar work. Seminar on assigned readings in experiment station and other dairy literature will be arranged in this course.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Dairy Production. Three credit hours. Second term. First year. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the composition of milk and the

formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat; and entering of cows in the Advanced Registry. In the laboratory practical work will be given in testing milk and cream for butter fat and testing dairy herds for butter fat production.

53. Farm Dairy Manufactures. Three credit hours. First term. Second year. Mr. Erf, Mr. Cunningham, Mr. Stoltz, Mr. Clevenger.

Lectures will be given on laws and regulations relating to dairy products, the handling of milk on the farm, and the manufacture of dairy products on the farm. Laboratory work will be given in testing cream, butter, and cheese, the handling and manufacture of butter and cheese, and the designing of dairy barns and milk houses.

56. Specialized Dairying. Three credit hours. Time to be arranged.

This course is intended for those who wish to specialize in dairy farm management, city milk supply, buttermaking, cheesemaking or ice-cream making. The work is largely laboratory work, supplemented with lectures.

57-58. Specialized Dairying. Four credit hours. The year. Time to be arranged.

This course is intended for those who wish to specialize in dairying. It embraces farm management, the equipment and operation of the dairy farm, the making and marketing of butter, the making and marketing of cheese, the sanitary production of milk and the marketing of the same, and the manufacture of ice cream. The work is largely laboratory work, supplemented with lectures.

DRAWING

See Engineering Drawing

ECONOMICS AND SOCIOLOGY

Office, 102 Page Hall

PROFESSORS HAGERTY, HAMMOND, LOCKHART, HUNTINGTON, RUGGLES, ASSISTANT PROFESSORS WALRADT, PARRY, MISS RENZ, MR. DRURY, MR. BRUDER, MR. HARRIS, MR. WEIDLER, MR. WILKINSON, MISS MARK

ECONOMICS

135-136. Principles of Economics. Three credit hours. The year. Not open to first-year students. Should precede all courses in Economics except 131, 133. Concurrent 139. Mr. Hammond, Mr. Lockhart, Mr. Ruggles, Mr. Parry, Mr. Drury, Mr. Weidler, Mr. Wilkinson.

A careful study of the laws of production, exchange, distribution, and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures, and individual investigation.

136 is given also the first semester. Mr. Walradt.

135 is given also the second semester. Mr. Walradt.

139. Elements of Accounting. Three credit hours. First semester. Prerequisite, registration in Economics 135-136. Mr. Harris and assistant.

This course should be followed by Economics 171.

In this course the student is made familiar with the essentials of accounting as exemplified in the main types of book-keeping. The main object is to give the student such a grasp of fundamental principles as will enable him to understand the significance of accounts, which with the increasing emphasis on the business side of farming becomes important to the agriculturist as well as to other business men.

171. Principles of Accounting. Three credit hours. First semester. Prerequisite, Economics 139. Mr. Harris.

The principles of modern accounting, including a study of some of its problems, especially those connected with the balance sheet and the income statement, as the valuation of assets, and the treatment of good will, depreciation, capital stock, profits, surplus, reserves, etc.

147-148. Financial History of the United States. Two credit

hours. The year. Prerequisite, Economics 135-136. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans, and financial administration, currency legislation, and the development of banking institutions.

149. Business Law. Three credit hours. Either semester. Prerequisite, Economics 135-136.

This course aims to cover the subjects most useful to men looking to a business career. It is not intended as a substitute for courses in the law school. Its purpose is to give the young business man a grasp of legal principles, not to train him to be a lawyer. The main topics to be found in contracts, agency, sales, bailments and carriers, bills and notes, and partnerships and corporations are treated. Problems covering these topics are presented and discussed in class.

For Advanced Undergraduates and Graduates

141. Public Finance. Two credit hours. First semester. Prerequisite, Economics 135-136. Mr. Lockhart.

Public expenditure; public revenues, with special reference to taxation; public credit; the budget; financial administration.

***161. Mercantile Institutions in Domestic Trade.** Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Hagerty.

The evolution and organization of mercantile institutions. Methods of marketing goods, the functions of the various distributors, and the work of produce exchanges. The internal or administrative organization of mercantile concerns. A study of mercantile credit, including the functions of mercantile agencies, credit men's associations, bankruptcy legislation, etc.

144. Problems of Taxation. Two credit hours. Second semester. Prerequisite, Economics 141. Mr. Lockhart.

A course dealing with questions of reform in taxation. The Ohio system of taxation will be given special consideration.

153. Money and Currency. Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Lockhart.

*Not given in 1915-1916.

The relation of money to prices; the cost of living; monetary systems; the gold standard, bimetallism, the gold-exchange standard, government and bank paper money; banking history and legislation; currency and banking reform in the United States, with special reference to the prevention of financial panics, and the provision of adequate credit facilities for the farmers.

167. Railway Economics. Three credit hours. First semester. Prerequisite, Economics 135-136. Mr. Ruggles.

The development of the means of transportation. Railway growth and consolidation. Railway rate theories and practice. Railway commissions and public control. Government ownership of railroads.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Miss Renz, Mr. Bruder, Miss Mark.

Not open to first-year students.

A study of the fundamental principles of sociology. Textbook, lectures, collateral reading, and individual investigations. Sociology 101 is given the second semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Miss Renz.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions, and its problems.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102. Miss Renz.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

For Advanced Undergraduates and Graduates

111. Poverty. Three credit hours. First semester. Prerequisite, Sociology 101-102. Mr. Hagerty.

A study of the personal and social causes of poverty and dependency. Exploitation, maladjustment, housing conditions,

tenement legislation, etc. The maintenance of a reputable standard of living.

112. Preventive Philanthropy. Three credit hours. Second semester. Prerequisite, Sociology 109 or 111. Mr. Hagerty.

A study of preventive institutions and methods for the promotion of thrift, and for sanitation and public health; parks, playgrounds; substitutes for the saloon; social settlements; child labor legislation; industrial education; building codes, etc.

***109. Modern Charity.** Three credit hours. First semester. Prerequisite, Sociology 101-102. Mr. Hagerty.

The treatment of dependent and defective classes. A history of poor relief in Great Britain and the United States. Outdoor and indoor relief, both public and private. Organized charity, the treatment of the vagrant, the care of dependent children, the insane, the feeble-minded, the epileptic, and the education of the blind and the deaf.

For graduate courses in this department see the Bulletin of the Graduate School.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN, WILLIAMS, SHEETS, MR. HARPER, MR. TURNBULL, MR. GILBERT, MR. SVENSEN

101. Elementary Mechanical Drawing. Two credit hours. First semester.

102. Mechanical Drawing. Three credit hours. Second semester. Prerequisite, Drawing 123. Lettering, orthographic, isometric, and oblique projections. Mr. French and department instructors.

123. Engineering Drawing. Two credit hours. First semester. Forestry, first year.

125. Mechanical Drawing. Two credit hours. Either semester. Agriculture and Horticulture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

*Not given in 1915-1916.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Drawing 127.

127 and 128 are required in Home Economics, second year.

137-138. Engineering Drawing. Two credit hours. First semester. Prerequisite, Drawing 123 or 101.

A course especially for forestry students. Practice in topographic drawing, lettering, tracing, and blue-printing, and the design of simple engineering structures, such as culverts, trestles, small wooden bridges, and dams.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, McKNIGHT, GRAVES, ASSISTANT
PROFESSORS BECK, KETCHAM

101. Paragraph Writing. Description and Narration. Two credit hours. Either semester. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing. Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101-104. Mr. Beck.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101-104. Mr. Beck.

121. Public Speaking. Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

122. Debating. Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

131. Survey of English Literature. Three credit hours. Either semester. No prerequisite course. Mr. Cooper, Mr. Beck. Second semester, Mr. Taylor, Mr. Graves.

The outline of the history of English literature will be given by lecture. The following will be read: Shakespeare's Richard III, Twelfth Night, Coriolanus; Milton's Paradise Lost, Books III, IV; Bunyan's Pilgrim's Progress, Pt. I; Dryden's Palamon and Arcite; Addison's Essays; Pope's Rape of the Lock; Goldsmith's Essays; Scott's Kenilworth; Byron's Mazeppa; Carlyle's Essay on Biography; Dickens's Martin Chuzzlewit; Stevenson's Virginibus Puerisque.

European History 103-104 (Narrative History) is recommended in connection with this course.

133. Survey of American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor, Mr. Graves. Second semester. Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant, and Poe; of Hawthorne, Emerson, Whittier, Longfellow, and Lowell; and of Walt Whitman; with a brief survey of recent literature.

FOR SHORT COURSES ONLY

91-92. Elementary English. Three credit hours. The year. Description, narration, exposition, and argumentation.

EUROPEAN HISTORY

Office, 204 University Hall

PROFESSORS SIEBERT, McNEAL, PERKINS, MR. HARRIS

101. Medieval History. Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

102. Modern History from 1500 A. D. Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

FORESTRY

Office, 101 Horticulture and Forestry Building

PROFESSOR LAZENBY, ASSISTANT PROFESSOR SCHERER,
MR. PFLEUGER

101. Introduction to Forestry. Two credit hours. First semester. Lectures and field work.

A general presentation of the subject, its objects, methods,

and economic importance. A study of the trees and shrubs in the University woodlot and on the campus.

102. Silvics. Two credit hours. Second semester.

A continuation of the study of local trees and shrubs from the forester's standpoint. The biological characteristics not only of species but of stands and societies of trees and shrubs.

103. History and Relations. Two credit hours. First semester.

The history of forestry in other countries to show a parallel to almost every progressive step taken in this country. The relation of forestry and forests to climate, soil, waterways, and general welfare.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Two lectures or recitations, and field work.

The cultivation and management of trees for various specific purposes, such as windbreaks, hedges, shade, and ornament, small plantations for post and pole timber, for maple syrup, for nuts, etc. The care of farm woodlots; treatment of diseased and injured trees.

The above courses, while designed for forestry students, are open and adapted to students of other departments.

105. Silviculture. Three credit hours. First semester. Lectures and field work.

A review of soil, climate, exposure, and other ecological factors influencing forest growth; description of typical woodlands and forests; collecting and testing forest tree seeds. Care of woodlands and forests, including natural regeneration, pruning, thinning, etc.

106. Silviculture. Three credit hours. Second semester. Lectures and field work. Prerequisite, Forestry 101 and 102.

A study of forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation, practice in seedbeds and nurseries; sowing seeds and transplanting in forests; establishment, improvement, and extension of woodlands.

107. Forest Mensuration. Four credit hours. First semester. Lectures and field work. Prerequisite, Forestry 105 and 106.

Methods of measuring the volumes of felled and standing

trees; of ascertaining the volume of definite forest areas; studying the age; rate of growth and future yield of trees and forests; making stem, stump, and sectional analysis; surveys and estimates of values of trees and forest stands.

111. Forest Protection. Two credit hours. First semester. Lectures and recitations.

Protection from fire and other inanimate enemies; from insects, fungi, and other animate enemies.

112. Forest Craft. Two credit hours. Second semester. Lectures and practical exercises.

Packing; camping; ranger cabins; trails; forest telephone and telegraph lines; first aid to sick and injured.

113. Forest Economics. Two credit hours. First semester. Lectures and recitations. Prerequisite, Forestry 105 and 106.

The economic value and benefits of forests; state and national forest laws and organization; state and national forests, and forest problems; the forest reserves of the United States; civil service regulations; foreign forest service.

114. Forest Policy. Two credit hours. Second semester. Lectures and recitations. Prerequisite, Forestry 113.

Functions of the federal government, the states, counties, municipalities, and communities relative to forestry. Public regulation of privately owned forests.

116. Forest Products. Four credit hours. Second semester. Lectures and laboratory work. Prerequisite, Forestry 105 and 106.

The physical properties of wood; various methods of wood preservation; wood working plants and industries; various uses of wood.

117-118. Seminar. One credit hour. The year.

119-120. Advanced Forestry. Three to five credit hours. Investigation and research. Subject to be assigned. Open as a senior elective in Forestry.

***115. Grazing and Range Investigations.** Two credit hours. First semester. Third year. One lecture and field laboratory work. Prerequisites, Forestry 101 and Botany 102. Mr. Scherer.

Historical development; the function and object of grazing; rules and regulations past and present, and principles govern-

*Not given in 1915-1916, except as elective.

ing the same. Methods of running stock, both sheep and cattle, and the effect on the range and forest; brands and branding; a study of the most important poisonous range plants.

121. Lumbering. Three credit hours. First semester. Two lectures and one three-hour period of field work per week. Prerequisite, Forestry 107.

The methods of logging used in the principal lumber regions of the United States. Detailed study of the methods of transportation, including logging railways, inclines, tramways, log slides, dams, river driving, rafting and fluming. Determination of stumpage values.

(Forestry 121 and 122 formerly Forestry 108).

122. Forest Utilization. Four credit hours. Second semester. Lectures and field work. Prerequisite, Forestry 121. Mr. Pfeuger.

Methods of milling the forest product and the equipment, arrangement and management of lumber manufacturing plants. Log scaling and mill scale studies. The seasoning and grading of lumber. Utilization of waste in lumber manufacture. Determination of logging costs and profits and study of timber bonds.

123. Forest Management. Four credit hours. First semester. Lectures and field work. Prerequisite, Forestry 106, 107, 124; Civil Engineering 121. Mr. Pfeuger.

The principles underlying the management of forests. Forest regulation, surveys and working plans. The preparation of a complete working plan for a definite forest area is required. Forest mapping.

***124. Forest Finance and Administration.** Two credit hours. Second semester. Two lectures. Prerequisite, Forestry 107. Mr. Pfeuger.

Forest valuation and statistics. The laws of compound interest as applied to forestal investments. A study of the cost, sale, and expectation values of forests. Future returns from forestry, methods of administering forest property; organization of the National Forest force, with special reference to the problems arising in the conduct of the business. State and private administration.

(Forestry 123 and 124 formerly Forestry 109).

*Not given in 1915-1916.

126. Silvicultural Problems. Three credit hours. Second semester. Mr. Scherer.

Research work in various phases of silviculture. Open only to fourth and fifth-year students in forestry.

127. Principles of Forestry. Two credit hours. First semester. Lectures, with occasional recitations and field trips. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry; the problems it has to solve; the conditions necessary to its success; the materials with which it has to work; and the technical terms peculiar to it—all serving to introduce the student to a broad glimpse of all the phases of the profession. It is planned to acquaint the student with the conditions necessary to tree growth; the factors influencing the distribution of forests; the different types of forests; the distribution of forests over the world; the important genera of trees comprising them; the exploitation and yield in different places, and the relative importance of forest products.

Not open to Forestry students.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Introduction to Forestry. Four credit hours. First term. Lectures, laboratory and field work.

This course will present a brief history of forestry, pointing out its objects and economic importance. The relation of forests and woodlands to soil, climate, streamflow and general welfare. The economic value of a good timber supply; improvement and care of farm woodlots; special plantations for posts and pole timber; planting and management of forest trees for specific purposes such as windbreaks, hedges, shade and ornament, maple syrup, nuts, etc. A prominent feature of the course will be getting acquainted with the trees and shrubs on the campus and University woodlots.

GEOLOGY

Office, 104 Orton Hall

PROFESSORS PROSSER, BOWNOCKER, ASSISTANT PROFESSOR HILLS, MR. VERWIEBE, MISS MARK

103. Inorganic Geology. Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models, and museum materials.

104. Historical Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103. Mr. Prosser.

A general course in paleontological and stratigraphical geology, illustrated by lantern views, maps, and specimens. The development of organisms and the classification and distribution of the geological formations, especially those of Ohio, are considered. Every other week after the first of April there will be field trips on Saturday in place of the Friday lecture.

151. General Geology. Three credit hours. Either semester. Mr. Prosser, Mr. Verwiebe.

The first half of the semester, or while the weather permits, field trips will alternate with the laboratory periods. Field trips Friday afternoon or Saturday morning, when the laboratory work will be omitted for that week.

Structural, dynamical, and historical geology. The lectures are illustrated by maps, specimens, and lantern views. The common rock-forming minerals and rocks are studied in the laboratory; while in the field various illustrations of geological structure are pointed out and formations identified.

153. Applied Geology. Three credit hours. First semester. Prerequisite, Geology 151. Mr. Bownocker, Mr. Hills, Miss Mark.

The common rocks of the earth's crust, their breaking down, and the formation of mantle rock. Fuels, building stones, lime, cement, clays, salt, phosphate deposits, and the most useful metals are studied.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the

agencies producing them; the atmosphere, and the ocean. Recitations, lectures, map work, and field work.

For Advanced Undergraduates and Graduates

105. Field Geology. Three to five credit hours. First semester. Prerequisite, Geology 101 or 103 and 104. Mr. Prosser.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

Study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103, and 104. Mr. Bownocker.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings, and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Prerequisite, Geology 101 or 103, and 104. Mr. Prosser, Miss Mark.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three or more credit hours. First semester. Prerequisite, Geology 103 and 104. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin; the non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals, emphasis will be laid on the products of Ohio.

For graduate courses in this department see the Bulletin of the Graduate School.

GERMAN

Offices, 317 and 318 University Hall

PROFESSORS EVANS, EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, LEWISOHN, BUSEY, DR. KEIDEL, MR. KOTZ, DR. NORDMEYER, AND DEPARTMENT ASSISTANTS

101-102. Elementary German. Four credit hours. The year. All instructors.

German 102 is given also the first semester.

German 101 is given also the second semester.

103. Intermediate German. Four credit hours. First semester. Prerequisite, German 101-102, or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose and a classical drama supplemented by discussions of syntax; prose composition.

German 103 is given also the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Second semester. Prerequisite, German 103, or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is also given the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103, or three entrance units.

Rapid reading of technical literature. This is preceded or

accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 107 Page Hall

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year.

Text: Graves's A history of Education (three volumes) and Graves's Great Educators of Three Centuries. Prerequisite, Psychology 101-102.

HOME ECONOMICS

Office, 104 Hayes Hall

PROFESSORS WHITE, DENTON, ASSISTANT PROFESSOR VAN METER, MISS HATHAWAY, MISS TUCKER, MRS. WALKER, MISS SKINNER, MRS. GARVIN, MISS McGUIRE, MISS BRADY

101-102. Foods. Five credit hours. The year. Prerequisite, Chemistry 106 or 110. Miss White, Miss Skinner, Miss McGuire, Mrs. Garvin.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost, and value of nutrients in the various food materials. Lectures and quiz are combined with laboratory work.

104. Sanitation. Three credit hours. Either semester. Prerequisite or concurrent, Bacteriology 107. Miss Denton.

Location and construction of the house from the point of view of water supply, plumbing, heating, ventilating and lighting. Interdependence of home and public agencies in securing sanitation and hygiene. Special attention is given to emergencies, first aid to the injured, and home nursing.

108-109. The Teaching of Home Economics. Two credit hours. Either semester. Open only to seniors in Home Economics. Miss Van Meter, Miss Hathaway.

For students intending to teach Home Economics. Lec-

tures, conferences, observation work, making of lesson plans, examination of courses of study, practice teaching.

111-112. Textiles. Two credit hours. The year. Prerequisite or concurrent, Art 119. Mrs. Walker, Miss Tucker, Miss Brady.

The study of fibres and fabrics from a historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. Lecture and laboratory. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway, Miss Brady.

Economics, hygiene, design, and color in their relation to dress. The laboratory work includes the drafting and designing of patterns, the careful selection and combination of materials, and the making of a simple cloth dress.

116. Dress. Three credit hours. Second semester. Lecture and laboratory. Miss Hathaway, Miss Brady.

Continuation and amplification of Home Economics 113.

A related art course must be taken with this work. In the lectures an outline of the history of costume will be given, which may be taken as a one-hour lecture course without the laboratory. The laboratory work continues Home Economics 113 in the drafting and designing of patterns, and includes the making of silk and draped dresses.

118. The House. Three credit hours. Either semester. Prerequisites, Economics 135-136, Art 131, 141, Home Economics 112. Home Economics 104 may be either prerequisite or concurrent. Miss Tucker.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. The House. Continuation of 118. Either semester. Prerequisites, Economics 136, Art 141, Home Economics 102-118. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare.

Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

121. Advanced Study of Foods. Three credit hours. First semester. Prerequisites, Chemistry 106 or 110, Home Economics 101 and 102.

A continuation of the study of foods involving demonstrations of underlying principles and studies of economic and commercial food problems.

For Advanced Undergraduates and Graduates

105-106. Seminar. Two to five credit hours. The year. Miss White, Miss Van Meter.

Open only to fourth year and graduate students.

Assigned problems for individual research.

110. Dietetics. Four credit hours. Either semester. Prerequisites, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Denton, Miss Skinner.

A study of the chemical, physiological, and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Laboratory work includes translation of standard dietaries into food materials and some exercise in making dietary studies. Practice is given also in preparation of food for the sick.

For graduate courses in this department see the Bulletin of the Graduate School

HORTICULTURE

Office, 118 Horticulture and Forestry Building

PROFESSORS PADDOCK, DAVIS, MONTGOMERY

Pomology

101. Principles of Horticulture. Four credit hours. First semester. Lectures and two laboratory hours per week. No Prerequisite. Mr. Davis.

A study of plant growth with special reference to orchard, garden, greenhouse, and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second

semester. Lectures and two laboratory hours per week. Prerequisite, Horticulture 101. Mr. Davis.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing, and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours per week. Prerequisite, Horticulture 101-102. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography; site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106, or equivalent. Mr. Paddock.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

108. Home Grounds. Three credit hours. Second semester.

A course adapted to the needs of students in pomology, vegetable gardening, and floriculture.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticized and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Second semester. Three lectures and two laboratory hours per week. Agriculture, third year. Open only to third and fourth year students in Agriculture and Forestry. Mr. Davis, Mr. Montgomery.

Vegetable gardening, fruit growing, and ornamental planting adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours per week. Prerequisite, Horticulture 105, 106. Mr. Davis.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading, and packing.

Vegetable Gardening

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Prerequisite, Horticulture 101 and 102. Mr. Montgomery.

A study of the history and development of vegetable gardening, the area and extent of the industry, and the several general factors concerned in the production and utilization of vegetables.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Fourth year. Prerequisite, Horticulture, 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Fourth year. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. By-Products. Three credit hours. First semester. Fourth year. Prerequisite, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods of the preservation of surplus garden and orchard products. The theory and art of canning, pickling, and preserving, the making of kraut, cider, and vinegar is considered from a commercial standpoint.

Floriculture

141-142. Commercial Floriculture. Four credit hours. The year. Floriculture, second year. Prerequisites, Horticulture 101, 132.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. Floral Designs. Three credit hours. First semester. Floriculture, fourth year. Prerequisite, Horticulture 141-142.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations, house decorations, etc.

144. Decorative and Bedding Plants. Three credit hours. Second semester. Floriculture, fourth year. Prerequisites, Horticulture 141-142.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding.

145. Garden Flowers. Three credit hours. First semester. Floriculture, third year. Prerequisite, Horticulture 141-142.

The propagation and growth of garden annual and perennial flowers as adapted to the florists' trade.

Landscape Architecture

151-152. Plant Materials. Two credit hours. The year. Prerequisite, Botany 101-102. One lecture and two laboratory hours per week.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours per week. Prerequisite, Horticulture 154 and 156.

This course takes up the general study of practical problems in design, a study of the important works of landscape architecture and the making of finished plans, reports and working drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Four credit hours. The year. Prerequisite, Horticulture 157-158.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of costs.

164. Landscape Surveying. Three credit hours. Second semester. Landscape Architecture, third year. One lecture and two laboratory hours per week. Prerequisite, Civil Engineering 121.

A study of the methods adopted in compiling surveys, especially for landscape use, field practice with instruments.

165. Civic Design. Three credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public-squares, street intersections, parks and play-grounds.

166. Landscape Engineering. Three credit hours. Elective. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 165.

This course covers in detail, a study of various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of costs, methods of construction and reports of costs.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective.

119. Floriculture. Three credit hours. Second semester. Four-year course in Horticulture.

A discussion of the history, propagation, and culture of florists' plants, and the diseases and insects that prey upon them.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. Mr. Davis.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year. Mr. Davis.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Elective for agricultural students. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

60. Landscape Gardening. Four credit hours. Second term. Horticulture, third year. Elective for agricultural students. Mr. Montgomery.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines, and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared. Prerequisite, Agricultural Engineering 53.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

59. Pomology. Four credit hours. First term. Elective. Horticulture. Prerequisites, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

64. Vegetable Gardening. Four credit hours. Second term. Elective. Horticulture, third year. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of

the more important vegetable crops, including irrigation, fertilizers, disease, and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Elective. Horticulture, third year. Mr. Montgomery.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Elective. Horticulture, third year. Prerequisite, Horticulture 65. Mr. Montgomery.

A continuation of Horticulture 65.

INDUSTRIAL ARTS

(See Shopwork)

MATHEMATICS

Office, 314 University Hall

PROFESSOR BOHANNAN, ASSISTANT PROFESSOR WEST

121. College Algebra and Trigonometry. Three credit hours. First semester. Two recitations and one two-hour problem period. Mr. West.

METEOROLOGY

Office, Townshend Hall

PROFESSOR J. WARREN SMITH

101. Elementary Meteorology. Two credit hours. First semester. Text-book, Milham's Meteorology.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

102. Agricultural Meteorology. Two credit hours. Second semester.

Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the

course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, The Armory

CAPTAIN CONVERSE, U. S. A. (RETIRED), LIEUT. THORPE,
U. S. A. (RETIRED)

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, both special and regular, to drill during two years unless excused by the Military and Gymnasium Board. This work is under an officer of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

1. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring) military drill, four months three hours per week (winter) of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of the winter months, at 100, 200, and 300 yards. Lecture, one hour each week by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours per week (divided between fall and spring), in extended order and guard duty. Four months, three hours per week (winter) of class-room instruction in articles of war, guard manual, and field service regulations. Target practice at any open hour of the afternoons of the winter months, at 500, 600, and 800 yards.

PHYSICAL EDUCATION

Office, Gymnasium

DR. H. SHINDLE WINGERT, MR. OHLSON, MR. BARTHOLOMEW,
MISS BOCKER, MISS SAUER, MISS COURTNEY

Physical Education for men and women is conducted under the direct supervision of the Professor of Physical Education, who is a medical graduate.

MEN

1. Physical Education. One credit hour. Two hours per week, the year. Required of all first year students in this college. During the first semester the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene. Lectures and quizzes on the cause, prevention, and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical exercise in class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

Medical Emergency Section

(In The Gymnasium)

This department maintains a medical emergency section open to all students, male and female, in the department. Emergency, medical advice and treatment is furnished free to students while on the campus, during regular University hours.

WOMEN

1. Physical Education. One credit hour. Four hours per week. Required of all women students during first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

2. Physical Education. One credit hour. Four hours per week. Required of all women students. For second-year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSOR COLE, MR. HEIL

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practice. Other courses in physics may be elected by four-year students in Agriculture.

103-104. General Physics. Four credit hours. The year. Recitations, lectures, and laboratory. A non-mathematical course for students who have no entrance credits in physics. Mr. Sheard.

105-106. General Physics. Four credit hours. The year. Prerequisite, entrance credit in physics. Mr. Blake.

108. Forestry Physics. Three credit hours. Second semester. Forestry, first year. Recitations and laboratory practice.

PHYSIOLOGY

Office, 204 Biological Hall

PROFESSOR BLEILE, ASSOCIATE PROFESSOR SEYMOUR, ASSISTANT PROFESSOR DURRANT, MR. WRIGHT

101-102. Physiology. Three credit hours. The year. Not open to Freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Wright.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Physiology 101-102. Mr. Bleile.

PSYCHOLOGY

Office, 404 University Hall

PROFESSORS ARPS, HAINES, ASSISTANT PROFESSOR PINTNER, MR. WEISS, MR. EVANS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. Mr. Arps, Mr. Pintner, Mr. Weiss, Mr. Evans.

101 is repeated the second semester.

102 is repeated the first semester.

ROMANCE LANGUAGES AND LITERATURES

Office, 305 University Hall

PROFESSORS BOWEN, BRUCE, INGRAHAM, ASSISTANT PROFESSORS HAMILTON, CHAPIN, PEIRCE, MR. DITCHY, MR. MOORE

FRENCH

101-102. Elementary French. Four credit hours. The year. Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bower's First Scientific. Historical and narrative prose; one or more prose comedies. All instructors.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition made to contribute to this end. Sight reading is emphasized.

French 101 is given also in the second semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102, or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Ditchy, Mr. Moore.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. Grammar: Ingraham-Edgren's and Ingraham's Victoria y Otros Cuentos. Easy prose and plays. Composition and practice in speaking. Mr. Ingraham, Mr. Hamilton, Mr. Chapin, Mr. Ditchy, Mr. Moore.

Spanish 101 is given also the second semester.

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Spanish 101-102, or equivalent. Mr. Ingraham or Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practice in speaking continued.

RURAL ECONOMICS

Office, 100 Townshend Hall

PROFESSOR PRICE, ASSISTANT PROFESSORS PHILLIPS
AND FALCONER

101. Farm Accounts and Records. Two credit hours. First semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

Rural Economics 101 is given also the second semester.

103. Farm Management. Four credit hours. First semester. Agriculture, fourth year. Mr. Falconer, Mr. Phillips.

Lectures and recitations upon the problems of farm management, the relative profits of different systems of farm management, and their effect upon maintaining the fertility of the land. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Second semester. Prerequisite, Economics 135. Mr. Falconer.

Lectures and recitations upon the production, distribution, transportation and marketing of agricultural products. The relation of the industry of agriculture to other industries, co-operation in agriculture, agricultural organizations, and the social conditions of agricultural communities.

105. Historical and Comparative Agriculture. Three credit hours. First semester. Mr. Price.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

107-108. Research Work for Graduate Students. Five to ten credit hours. Mr. Price, Mr. Falconer.

Opportunity is offered to carry on special lines of research in farm management, history and literature of agriculture, and agricultural economics.

110. Rural Community Life. Three credit hours. Second semester. Four-year course in Agriculture.

Lectures and recitations on rural organizations and com-

munity life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

111-112. Advanced Farm Management. Five credit hours. The year. For advanced undergraduates and graduates. Prerequisites, Economics 135 and Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. The class-room work will deal largely with the factors of production.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. First term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Second term.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a study of systems of farm management, the cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Co-operation in Agriculture. Four credit hours. First term.

Lectures and recitations on the co-operative organizations of agriculture. Co-operative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SCHOOL ADMINISTRATION

Office, West Basement, University Hall

ASSISTANT PROFESSOR BRICKER

Agricultural Education

122. The Teaching of Agriculture in the High School. Two credit hours. Second semester.

The administrative phases of secondary agriculture, the application of the principles of pedagogy to the teaching of agriculture in the high school, and the organization of agricultural materials into secondary courses of study will constitute the essential features. Intended especially for prospective supervisors and teachers of agriculture in high and normal schools. Text-book: Bricker's "The Teaching of Agriculture in the High School."

127. History of Agricultural Education. Two credit hours. First semester.

A survey of the rise and development of agricultural instruction in the United States. The land-grant colleges, the agricultural experiment stations, secondary and elementary school instruction, farmers' institutes, agricultural societies, the club movement, etc. Ohio agricultural educational institutions.

NOTE—For additional courses in Agricultural Education consult the College of Education bulletin, Department of School Administration.

SHOPWORK

Office, 103 Hayes Hall

PROFESSOR SANBORN, MR. BEEM, MR. FOUST, MR. DENMAN,
MR. SMITH, MR. WRIGHT, MR. BRECKUR

101. Carpentry. Two credit hours. Either semester. Mr. Beem, Mr. Denman, Mr. Smith.

Practice in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practice work is directly applicable to country life.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire, and tools, practice in iron

and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Three credit hours. First term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Three credit hours. Second term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; hardening and tempering steel, etc.

SPANISH

See Romance Languages

VETERINARY MEDICINE

Office, Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common sporadic and infectious diseases, minor surgery, castration, horse-shoeing, and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes,

symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSOR OSBORN, ASSOCIATE PROFESSOR HINE, ASSISTANT
PROFESSORS BARROWS, KRECKER, METCALF, MR.
KOSTIR, AND ASSISTANTS

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osborn, Mr. Barrows, Mr. Krecker, Mr. Kostir, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102. Mr. Osborn, Mr. Metcalf.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in entomology. Preparation of collections, essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in junior or senior year. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Zoology 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological in-

vestigators in experiment stations or as teachers in agricultural schools).

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102, 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each student of report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102, 107-108. Mr. Osborn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of selected group or groups of insects.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite, one year of Entomology. Mr. Metcalf.

Lectures, reading, field work, and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

151-152. Entomology. Insect Control. Three credit hours. Either semester. Prerequisite, Zoology 101-102, 107-108, 113-114, or equivalent. Mr. Metcalf.

Technical studies of insect control, utilization of parasitic or predaceous forms. Legislation, quarantine, inspection, insecticides, insecticide machinery, and practical work in fumigation, spraying, etc.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

For Advanced Undergraduates and Graduates

129-130. Quantitative Studies in Variation and Heredity. Two to five credit hours. The year. Prerequisites, Zoology

101-102, and one year of another biological science or equivalent. Mr. Barrows.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practice in measuring, assembling, and analyzing data, and the plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practice in handling and analysis of Mendelian data.

143-144. Seminar. One credit hour. The year. Mr. Osborn.

Discussion of assigned subjects, reports on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course.

149. Medical Entomology. Three to five credit hours. First semester. Prerequisite, Zoology 101-102, 107-108, 121-122, or equivalents. Mr. Metcalf.

Lectures, demonstrations, and recitations upon the insects concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation, and health.

153-154. Quantitative Studies in Animal Behavior. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and 107-108, or equivalent. Mr. Barrows.

Devoted especially to insects. Required in the four-year course in Entomology. Elective to other students.

157-158. Animal Parasitology. Three to five credit hours. The year. Prerequisite, Zoology 101-102, 121-122, or equivalent. Mr. Krecker.

A consideration from the zoological standpoint of the parasitic forms in all animal phyla. In lectures and assigned readings attention will be given to the conditions of parasitic life, the effects upon the host, and origin of parasitism. Laboratory studies of life histories and practice in technic.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91-92. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee—The fee for all students is fifteen dollars a semester.

The fee for the Short Courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit—Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Burjar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars; in Botany and Zoology the fee is two dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee—The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform—The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that second-hand uniforms were unfit to wear and cer-

tainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union—A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee—A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board—Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars and twenty-five cents to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons, by young men at reasonable rates.

Text-Books—Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee.....	\$30 00
Ohio Union.....	2 00
Gymnasium locker.....	4 00
Deposits to cover laboratory materials and breakage	20 00
Uniform.....	12 00
Books	15 00
Board—36 weeks at \$3.50 per week.....	126 00
Room rent, at \$8.00 per month.....	72 00
General expenses.....	100 00
	<hr/>
	\$381 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform, and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

Women Students—As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed three dollars and a half a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given principally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is

secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

Home Makers' Course. Cooking, Baking, Canning, Home Decoration, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information describing the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus.

TIME SCHEDULE

COLLEGE OF AGRICULTURE

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the elective cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

KEY TO ABBREVIATIONS

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Hall
- Ha.—Hayes Hall
- H. F.—Horticulture and Forestry
- L.—Library
- Lo.—Lord Hall
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY

Course No.	Hours	Time	Room	Instructor
103-104	5	L. M., W., at 9	T. 205	Vivian
		Lab. Tu., Th., 1 to 4	T. 210	Vivian
		W., 1 to 4; S., 8 to 11	T. 210	Vivian
		Tu., Th., 8 to 11	T. 210	Vivian
		Q. F., at 8.	T. 109, 205, 204, B. & Z. 67	
		F., at 9	T. 205, B. & Z. 67, B. & Z. 109, B. & Z. 110	
105-106	5	L. M. at 3	T. 205	Vivian
		Lab. to be arranged	T. 210	
107-108	3 to 5	To be arranged	T. 210	Vivian, Lyman
109-110	3 to 5	To be arranged	T. 210	Vivian
111-112	3 to 5	To be arranged	T. 205, 210	Vivian
113	2	Th., at 11	T. 204	Phillips
		Lab. M., 1 to 4		
121-122	3 to 5	L. Th., at 4	T. 204, 210	Vivian, Lyman
		Lab. to be arranged		
123	5	L. M., W., at 8	T. 205	Lyman
		Lab. M., 9 to 12; F., 8 to 11	T. 210	Lyman
		M., F., 1 to 4	T. 210	Lyman
			T. 210	Lyman
124	5	L. Tu., Th., at 8	T. 205	Lyman
		Lab. M., F., 1 to 4;	T. 210	
		M., F., 9 to 12	T. 210	Lyman
125-126	4 to 5	L. Tu., Th., at 10	T. 205	
		Lab. Tu., Th., 1 to 4	T. 210	Lyman
131-132	5 to 10	To be arranged	T. 205, 210	Vivian, Lyman

AGRICULTURAL ENGINEERING

101-101	4	L. M., W., F., at 9	H. F. 206	Ramsower
		Lab. M., 1 to 4		
		W., 1 to 4		

Course No.	Hours	Time	Room	Instructor
		Th., 1 to 4		
		F., 1 to 4		
103	3	Tu., Th., 1 to 4	H. F. 200	Ives
106	3	Tu., Th., 1 to 4		Ramsower, Ives
110	2	To be arranged		Ramsower
107	3	Tu., Th., 1 to 4		Ramsower, Ives
108	3	Tu., Th., 1 to 4		Ives

AGRONOMY

104	4	L. M., W., at 11	T. 205	McCall
		Tu., Th., at 11	T. 205	McCall
		Q. M., at 3	T. 109	McCall
		Tu., at 3	T. 204	McCall
		W., at 3	T. 109	McCall
		Th., at 3	T. 109	McCall
		F., at 11	T. 109	McCall
		F., at 3	T. 109	McCall
		Lab. M., 1 to 3	T. 103	McCall
		Tu., 1 to 3	T. 103	McCall
		W., 1 to 3	T. 103	McCall
		Th., 1 to 3	T. 103	McCall
		F., 1 to 3	T. 103	McCall
		Tu., 8 to 10	T. 103	McCall
		Th., 8 to 10	T. 103	McCall
		S., 8 to 10	T. 103	McCall
105	4	L. M., W., F., at 9	T. 109	McCall
		Lab. Tu., 1 to 4	T. 103	McCall
		W., 1 to 4	T. 103	McCall
106-106	4	L. M., W., F., at 9	T. 112	Livingston
		Lab. M., 1 to 3	T. 113	Livingston
		W., 1 to 3	T. 113	Livingston
		Th., 1 to 3	T. 113	Livingston
		F., 1 to 3	T. 113	Livingston
107	4	Tu., Th., at 8;	T. 109, 103	McCall
		Tu., Th., 1 to 4		
109	2 or 3	L. Tu., Th., at 9	T. 109	Livingston
		Lab. Tu., 1 to 3	T. 112, 113	Livingston

AGRONOMY—Continued

Course No.	Hours	Time	Room	Instructor
110	3	Tu., Th., 1 to 4	T. 109, 113	McCall
111	3	Tu., Th., at 9; Tu., 1 to 3	T. 109, 113	Livingston
113	3	Tu., Th., at 10; W., 1 to 4	T. 109, 113	Livingston
115-116	5 to 10	To be arranged		Livingston
117-118	5 to 10	To be arranged		Livingston
119-120	5 to 10	To be arranged		McCall
123	2	M., F., at 10	T. 109	McCall

AMERICAN HISTORY

101-102	3	M., W., F., at 8	U. 209	Schlesinger
101-102	3	M., W., F., at 8	U. 205	Bacot
101-102	3	M., W., F., at 9	L. 107	Schlesinger
101-102	3	M., W., F., at 9	U. 209	Bacot
101-102	3	M., W., F., at 1	U. 205	Schlesinger
101-102	3	M., W., F., at 1	U. 209	Bacot, Hockett
101-102	3	M., Tu., F., at 4	U. 205	Hockett
101-102	3	Tu., Th., S., at 11	U. 205	Bacot
101	3	Tu., Th., S., at 9	U. 205	Bacot

ANATOMY

101-102	3 to 5	L. W., at 1	Bio. 109	Landacre, Hoskins
		Lab. W., Th., F., after- noons		
103-104	3 to 5	L. Th., at 1	Bio. 107	Landacre
		Lab. W., Th., F., after- noons		
105-106	3 to 5	To be arranged	Bio.	Landacre
109-110	3 to 5	To be arranged	Bio.	Landacre
111-112	1	Tu., at 4	Bio. 103	Landacre
113-114	3 to 5	To be arranged	Bio.	Landacre
201-202	3 to 5	To be arranged	Bio.	Landacre
203-204	5 to 10	To be arranged	Bio.	Landacre
142 Vet. 4		L. M., F., at 8	Bio. 101	Landacre
		Lab. to be arranged		

ANIMAL HUSBANDRY

Course No.	Hours	Time	Room	Instructor
101-102	4	L. Tu., Th., at 8 M., W., at 3 Lab. M., F., 10 to 12 Tu., Th., 8 to 10 Tu., Th., 10 to 12 M., Tu., 1 to 3 Th., F., 2 to 4	Pav.	Gusler Gusler Gusler, Stone Gusler, Stone Gusler, Stone Gusler, Stone Gusler, Stone
103-104	4	M., W., F., at 11; M., 1 to 4	Pav.	Kays, Coffey
105	3	M., W., F., at 8 M., W., F., at 9	Pav.	Plumb
106	4	Tu., Th., at 8; W., at 1 Lab. W., 2 to 4 F., 1 to 3	Pav.	Kays Kays Kays
107	3	Th., F., 1 to 4	Pav.	Kays
108	4	L. M., Tu., Th., at 10 Lab. W., 1 to 3	Pav. Pav.	Coffey Coffey
109	2	Tu., Th., at 9	Pav.	Kays
110	1	Th., at 9	Pav.	Plumb
112	3	M., W., F., at 9	Pav.	Plumb
116	4	M., Tu., Th., at 10 Th., 1 to 3	Pav. Pav.	Gusler Gusler
117-118	3	Tu., Th., at 8 F., 1 to 3 Th., 1 to 3	Pav.	Jacoby
119	2	M., W., at 9	Pav.	Jacoby
120	1	To be arranged	Pav.	Jacoby
121	1	Tu., at 2	Pav.	Jacoby
122	1	To be arranged	Pav.	Jacoby
126	3	To be arranged	Pav.	Plumb
132	3	L. M., Tu., at 1 Lab. Th., 1 to 3	Pav.	Kays
201-202		To be arranged		Plumb

ART

Course No.	Hours	Time	Room	Instructor
117	3	L., W., at 9	Ha. 201	Robinson
		Lab. M., F., 8 to 10	Ha. 201	Robinson
119	1	F., at 3	Ha. 204	Kelley
121	2	Tu., Th., 10 to 12	Ha. 201	Shepherd
131	2	M., F., 10 to 12	P. 205	Norris
		Tu., Th., 10 to 12	P. 205	Kelley
		Tu., Th., 10 to 12	Ha. 200	Norris
		Th., F., 1 to 3	P. 205	Shepherd
		Tu., Th., 1 to 3	Ha. 200	
131	2	Tu., Th., 10 to 12	Pa. 205	Norris
132	2	Th., F., 1 to 3	Pa. 205	Norris
		Tu., Th., 10 to 12	Ha. 200	Robinson
133	2	M., Tu., 1 to 3	Ha. 200	Shepherd
134-134	3	M., W., F., 1 to 3	P. 205	Norris
		Tu., Th., F., 8 to 10	Ha. 200	Shepherd
135-135	4	M., W., F., 1 to 3	P. 205	Norris
136	2	Tu., Th., 8 to 10	Ha. 200	Shepherd
137	3	M., W., F., 8 to 10	Ha. 200	Shepherd
138	3	M., F., 9 to 12	Ha. 200	Kelley, Robinson
139	3	Tu., Th., 1 to 4	Ha. 200	Kelley
141	2	L. W., at 9		Kelley
		Lab., M., at 9	Ha. 201	Robinson, Shepherd
		Tu., at 9	Ha. 201	Robinson
		Th., at 9	Ha. 201	Robinson
		Tu., at 10		Shepherd
		Th., at 10		Shepherd
		F., at 9	Ha. 201	Robinson, Shepherd
142-142	3	M., F., 10 to 12	Ha. 201	Kelley, Robinson
143	3	Tu., Th., at 9	Ha. 200	Kelley, Robinson, Norris
144	3	Tu., Th., at 10	P. 205	Norris

Course No.	Hours	Time	Room	Instructor
145	3	To be arranged		Kelley, Robinson, Norris
151	3	M., W., F., at 11	Ha. 204	Kelley
152	3	M., W., F., at 11	Ha. 204	Kelley
153	3	M., W., F., at 9	Ha. 204	Kelley
154	2	M., W., at 3	Ha. 204	Kelley
155	2	M., F., at 9	Ha. 204	Kelley
156	2	M., W., at 3	Ha. 204	Kelley
157	3	M., W., F., at 2	Ha. 204	Kelley
158	5	To be arranged	Ha. 204	Kelley

ARCHITECTURE

101-102	3	M., W., F., at 9	Br. 104	Chubb
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BACTERIOLOGY

101	4	L. M., F., at 10 Lab. Tu., 10 to 12; S., 8 to 11 M., 1 to 4; Th., 10 to 12	V. L. 102 V. L. 8 V. L. 8	Morrey Starin Starin
102	2	L. M., at 9 Lab. W., 1 to 4	V. L. 102 V. L. 201	Froning Froning
107	4 or 5	L. M., W., at 11 T., Th., at 9 Lab. M., 1 to 4; S., 8 to 11 Tu., Th., 1 to 4 W., F., 1 to 4	V. L. 101,102 V. L. 101,102 V. L. 201,205 V. L. 201,205 V. L. 201,205	Morrey Morrey Froning, McCoy Froning, McCoy Froning, McCoy
108	2 to 5	L. M., W., at 11 T., Th., at 9 Lab. Afternoons	V. L. 101,102 V. L. 101,102 V. L. 205	Morrey Morrey Froning, McCoy
110	2 to 5	L. Tu., Th., at 11 Lab. Afternoons	V. L. 102 V. L. 201	Morrey Morrey
112	2 to 5	L. Tu., Th., at 8 Lab. Afternoons	V. L. 102 V. L. 201	Morrey Morrey

BACTERIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
114	2 to 5	L. M., W., at 9 Lab. Afternoons	V. L. 102 V. L. 205	Morrey Morrey, McCoy
116	2 to 5	L. M., W., at 8 Lab. Afternoons	V. L. 102 V. L. 201	Morrey Morrey
117	2 to 5	L. W., at 11; F., at 1 Lab. Tu., Th., 1 to 4 W., 1 to 4; F., 2 to 5	V. L. 102 V. L. 8 V. L. 8	Starin Starin Starin
118	2 to 5	L. M., at 2; F., at 1 Lab. W., 1 to 4; F., 2 to 5	V. L. 102 V. L. 8	Starin Starin
119-120	2 to 5	To be arranged		Starin
121-122	2 to 5	To be arranged		Morrey
123-124	2 to 5	To be arranged		Morrey
125-126	2 to 5	To be arranged		Morrey, Starin
51	3	L. M., W., F., at 8	V. L. 102	Starin

BIBLICAL LITERATURE

103-104	3	M., Tu., Th., at 10	O. 2	Breyfogle
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BIBLIOGRAPHY

101-102	1	To be arranged	L.	Jones
103	$\frac{1}{2}$	M., at 3	L. 107	Reeder
103	$\frac{1}{2}$	Tu., at 3	L. 107	Reeder
103	$\frac{1}{2}$	Th., at 9	L. 107	Reeder
103	$\frac{1}{2}$	Th., at 3	L. 107	Reeder
103	$\frac{1}{2}$	F., at 10	L. 107	Reeder
105-106	1	W., at 4	L. 107	Reeder

BOTANY

101-102	4	L. Tu., at 8 Tu., at 10 W., at 11 W., at 1 Lab. M., F., 10 to 12 Tu., Th., 8 to 10 Tu., Th., 8 to 10	B. Z. 100 B. Z. 100 B. Z. 100 B. Z. 100 B. Z. 108 B. Z. 108 B. Z. 62	Schaffner Detmers Griggs Stover Griggs
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Course No.	Hours	Time	Room	Instructor
		Tu., Th., 10 to 12	B. Z. 206	
		Tu., Th., 10 to 12	B. Z. 108	
		M., Tu., 1 to 3	B. Z. 108	
		Th., F., 1 to 3	B. Z. 108	
		Tu., Th., 1 to 3	B. Z. 206	
		M., F., 1 to 3	B. Z. 206	
		M., Tu., 1 to 3	B. Z. 62	
		Th., F., 1 to 3	B. Z. 62	
		Q. M., at 3	B. Z. 208,110	
		Tu., at 3	B. Z. 208,110	
		Th., at 8	B. Z. 208	Griggs
		Th., at 10	B. Z. 110	
		W., at 9	B. Z. 208	
		Th., at 3	B. Z. 208,110	
		Fr., at 3	B. Z. 208,110	
107	2	W., 1 to 4	B. Z. 108	Detmers
110	2	W., 1 to 4	B. Z. 110, 62	Schaffner
112	4	M., W., F., at 11; W., 1 to 3	B. Z. 108,110	Detmers
113	3	W., at 11; M., F., 9 to 11	B. Z. 208,206	Stover
116	3	W., at 11; M., F., 9 to 11	B. Z. 206,208	Stover
117-118	4	Tu., Th., at 9 M., W., 1 to 4	B. Z. 110,112	
120	3	Sat. and Mon. P. M.	B. Z. 208	Griggs
121	3	W., 1 to 4	B. Z. 110, 62	Schaffner
125-126	4	Tu., Th., at 8 Tu., Th., 1 to 3	B. Z. 110,112	
127-128	3	L. Tu., Th., at 9 Lab. Tu., Th., arranged	B. Z. 208 B. Z. 210	Griggs
129-130	3 to 5	M., 1 to 4 Tu., Th., to be arranged	B. Z. 60	Schaffner
131-132	3 to 5	To be arranged	B. Z. 104	Schaffner
133-134	3	To be arranged		Schaffner, Griggs
135-136	1	M., at 4	B. Z. 110	Schaffner
137-138	1	To be arranged	B. Z. 104	Schaffner
139-140	3 to 5	Lab. Tu., W., Th., ar- ranged	B. Z. 210	Griggs
142	2	F., 1 to 4	B. Z. 62	Schaffner

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
143-144	3	W., 1 to 4; other hours arranged	B. Z. 210	Griggs
201-202	3 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
203-204	4 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
205-206	4 to 10	To be arranged	B. Z. 112	
207-208	3 to 10	To be arranged	B. Z. 210	Griggs, Stover
91	4	To be arranged		Stover

CHEMISTRY

101-102	4	L. F., at 10	Ch. 101	Evans
		Q. M., at 10	Ch. 302	
		Tu., at 10	Ch. 301	
		Lab. M., Tu., 1 to 4	Ch. 6	
		Th., F., 1 to 4	Ch. 6	
101	4	Lab. W., 8 to 10		
		S., 8 to 12 (V. M.)	Ch. 6	
104	2	M., at 11; S., 8 to 11 (V. M.)	Ch. 6	
105-106	4	L. M., at 8	Ch. 200	Evans
		M., at 3	Ch. 200	Evans
		Q. Tu., at 8	Ch. 302	
		Tu., at 10	Ch. 302	
		Tu., at 11	Ch. 207	
		W., at 11	Ch. 302	
		Th., at 9	Ch. 302	
		Th., at 11	Ch. 302	
		Th., at 1	Ch. 207	
		Th., at 2	Ch. 207	
		Th., at 3	Ch. 207	
		F., at 8	Ch. 207	
		F., at 9	Ch. 302	
		F., at 10	Ch. 207	
		F., at 1	Ch. 207	
		F., at 2	Ch. 207	
		F., at 3	Ch. 207	

Course No.	Hours	Time	Room	Instructor
		Lab. M., Tu., 1 to 4	Ch. 1, 6	
		Th., F., 1 to 4	Ch. 1, 6	
		M., F., 9 to 12	Ch. 1, 6	
		Tu., Th., 9 to 12	Ch. 1, 6	
		W., 1 to 4; S., 8 to 11	Ch. 1, 6	
105	4	L. F., at 8	Ch. 200	
		Q. M., at 8	Ch. 302	
		Lab. M., F., 9 to 12		
109-110	4	L. Tu., at 8	Ch. 200	Evans
		W., at 11	Ch. 200	Evans
		Q. Th., at 8	Ch. 302	
		Th., at 10	Ch. 302	
		Th., at 11	Ch. 207	
		Th., at 1	Ch. 302	
		Th., at 2	Ch. 302	
		Th., at 3	Ch. 302	
		F., at 8	Ch. 302	
		F., at 9	Ch. 207	
		F., at 10	Ch. 302	
		F., at 11	Ch. 302	
		Lab. M., Tu., 1 to 4	Ch. 1, 6	
		Th., F., 1 to 4	Ch. 1, 6	
		M., F., 9 to 12	Ch. 1, 6	
		Tu., Th., 9 to 12	Ch. 1, 6	
		W., 1 to 4; S., 8 to 11	Ch. 1, 6	
109	4	L. Th., at 8	Ch. 200	
		Q. Tu., at 8	Ch. 301	
		Lab. M., F., 9 to 12		
127	4	Tu., Th., at 1; W., F., at 8	Ch. 200	McPherson
151-152	2	Tu., Th., at 8	Ch. 101	McPherson
153-154	2 or 3	Lab. open in afternoons		McPherson

CIVIL ENGINEERING

121	6	M., W., F., at 11	Br. 205	Neilson, Kilmer
		Th., F., 1 to 4; S., 8 to 11		

DAIRYING

Course No.	Hours	Time	Room	Instructor
101	4	L. Tu., Th., at 8	T. 112	Erf
		Tu., Th., at 11	T. 112	Erf, Cunningham
				Stoltz
		Lab. Tu., Th., 1 to 3	T. 3, 5, 10	
		Tu., Th., 8 to 10	T. 3, 5, 10	
102	4	F., 1 to 5	T. 3, 5, 10	
		S., 8 to 12		
		L. Tu., Th., at 11	T. 112	Erf
		Lab. Tu., Th., 1 to 3		
103	2	L. M., at 10	T. 112	Cunningham
				ham
		Lab. M., 1 to 4	T. 5	Cunningham
				ham
		W., 1 to 4		
103	2	L. M., at 10	T. 112	Cunningham
				ham
		Lab. M., 1 to 4	T. 5	Cunningham
				ham
		W., 1 to 4	T. 5	Cunningham
105-105	4	L. to be arranged		Clevenger
		Lab. M., Tu., 1 to 4	T. 11	Clevenger
		Th., F., 1 to 4	T. 11	Clevenger
		M., F., 1 to 4	T. 11	Clevenger
		Tu., Th., 1 to 4	T. 11	Clevenger
107-107	3	L. Th., at 4	T. 112	Stoltz
		Lab. M., 1 to 5	T. 12	Stoltz
		W., 1 to 5	T. 12	Stoltz
110	5	L. Tu., Th., at 9	T. 112	Erf, Cunningham
				ham
		Lab. Th., 1 to 4	T. 10	Erf, Cunningham
				ham
		S., 8 to 12	T. 10	Erf, Cunningham
111	3	L. to be arranged		Clevenger
		Lab. W., 1 to 4	T. 5	Clevenger
		S., 8 to 12	T. 5	Clevenger

Course No.	Hours	Time	Room	Instructor
113-114	3	S., 8 to 12	T. 5	Erf
117-118	5 to 10	To be arranged		Erf

ECONOMICS AND SOCIOLOGY**Economics**

131-131	3	M., W., F., at 9		Drury
131-131	3	M., W., F., at 1	P. 11	Walradt
133-133	3	M., W., F., at 1	P. 6	Weidler
133-133	3	M., W., F., at 9	P. 11	Wilkinson
135-136	3	M., W., F., at 8	P. 109	
135-136	3	M., W., F., at 8	P. 106	Drury
135-136	3	M., W., F., at 8	P. 12	Wilkinson
135-136	3	Tu., Th., S., at 9	P. 109	Weidler
135-136	3	M., W., F., at 9		Ruggles
135-136	3	M., W., F., at 9	P. 12	
135-136	3	M., W., F., at 9	P. 13	
135-136	3	Tu., Th., F., at 10	P. 13	Lockhart
135-136	3	Tu., Th., F., at 10		Drury
135-136	3	Tu., Th., F., at 10	P. 12	
135-136	3	M., W., F., at 11	P. 6	Drury
135-136	3	M., W., F., at 11	P. 109	Hammond
135-136	3	M., W., F., at 11	P. 11	Weidler
135-136	3	M., W., F., at 1	P. 12	Parry
135-136	3	M., W., F., at 2	P. 6	Parry
135-136	3	M., W., F., at 4	O. 105	Wilkinson
136	3	Tu., Th., S., at 10		Weidler
135	3	Tu., Th., S., at 10		
139	3	Tu., Th., at 8	P. 11	Harris
		Lab. Tu. or Th., 10 to 12	P. 11	Harris
139	3	Tu., Th., at 9	P. 11	Harris
		Lab. Tu. or Th., 10 to 12	P. 11	
139	3	M., F., at 10	P. 11	
		Lab. Tu. or Th., 10 to 12	P. 11	
149	3	Tu., Th., S., at 9		
145-146	2	M., 3 to 5	P. 13	Ruggles
141-144	2	Tu., Th., at 11		Lockhart
147-148	2	Tu., Th., at 8	P. 109	Walradt
153-154	3	M., W., F., at 9	P. 6	Lockhart

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
157-158	2	Tu., Th., at 8	P. 101	Ruggles
160-162	3	M., W., F., at 1	O. 5	
163-164	3	M., W., F., at 1	P. 109	Hammond
165-166	3	M., W., F., at 2	P. 109	Hammond
167-168	3	M., W., F., at 8	P. 9	Ruggles
169-170	2	To be arranged		Parry
171	3	Tu., Th., at 8	P. 11	
		Lab. Tu. or Th., 10 to 12	P. 11	
171	3	Tu., Th., at 9	P. 9	
		Lab. Tu. or Th., 10 to 12	P. 11	
173-174	3	M., W., F., at 8	P. 11	Harris
175	3	M., W., F., at 11		Drury
177	2	Tu., at 9	P. 9	Mark
		Lab. Th., 1 to 3	P. 11	Mark
178	2	Tu., at 9	P. 11	Mark
		Lab. Tu., 1 to 3		
177-178	2	Th., at 10	Ph. 303	Mark
		Lab. Th., 3 to 5	P. 11	
179-180	2	Tu., Th., at 9	P. 12	Lockhart
181-182	3	Tu., Th., F., at 10	P. 6	Walradt
207-208	2	M., 4 to 6	L. 305	All instructors

Sociology

101	3	M., W., F., at 8	P. 101	Renz
101-102	3	M., W., F., at 8	P. 100	Hagerty
101-102	3	M., W., F., at 8	P. 6	
101-102	3	M., W., F., at 9	O. 2	Renz
101-102	3	M., W., F., at 9	P. 109	Mark
101-102	3	Tu., Th., S., at 9	P. 6	Bruder
101-102	3	M., W., F., at 11	O. 2	
101-102	3	Tu., Th., F., at 10	Bio. 100	Bruder
101-102	3	M., W., F., at 2	P. 11	Mark
101-102	3	M., W., F., at 4	P. 6	Mark
101	3	M., W., F., at 8	P. 101	Renz
103-106	3	M., W., F., at 1	P. 13	Bruder
107	3	M., W., F., at 1	O. 2	Renz
108	1	Th., at 8	Arch. Bld.	Mills

Course No.	Hours	Time	Room	Instructor
111-112	3	M., W., F., at 9		Hagerty
113-114	3	M., W., F., at 2	P. 12	
115-116	2	To be arranged		Hagerty
117-118	2	M., 3 to 5	P. 109	Hagerty
120	3	M., W., F., at 1	O. 2	Renz
123-124	3	M., W., F., at 11	P. 12	Bruder
125-126	3	M., W., F., at 2	O. 2	Renz
127-128	3	Tu., Th., F., at 10	P. 109	Hagerty
203-204	3	M., W., F., at 11	L. 305	Parry
207-208	2	M., 4 to 6	L. 305	All instructors

ENGINEERING DRAWING

101	2	Lab. M., F., 8 to 10	Ha. 301	Svensen
		Lab. Tu., Th., 8 to 10	Ha. 301	Gilbert
		Lab. W., S., 8 to 10	Ha. 301	Svensen
		Lab. M., Tu., 1 to 3	Br. 203, 205	Sheets, Meiklejohn
		Lab. Th., F., 1 to 3	Br. 203, 205	Turnbull, Meiklejohn
101	2	Lab. M., Tu., 8 to 10	Br. 201	Meiklejohn
102	3	L. W., at 8	Br. 205	Meiklejohn
		L. W., at 11	Br. 205	Turnbull
		Lab. M., F., 8 to 10	Br. 202	
		L. M., at 8	Br. 203, 205	Meiklejohn, Turnbull
		Lab. Tu., Th., 8 to 10	Br. 201	
		L. F., at 8	Br. 205	French
		L. F., at 10	Br. 205	Meiklejohn
		Lab. W., S., 8 to 10	Br. 102	
		L., Th., at 8	Br. 203	Sheets
		L. F., at 8	Br. 203	Harper
		L. F., at 9	Br. 203	Sheets
		L. W., at 11	Br. 1	
		Lab. M., Tu., 1 to 3	Br. 202, 201	
		L. W., at 8	Br. 1	Svensen
		L. Th., at 8	Br. 104	Gilbert
		L. F., at 11	Br. 203	Meiklejohn
		Lab. Th., F., 1 to 3	Br. 202, 201	

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
103	3	L. M., W., at 11	Br. 203	Harper
		L. Tu., F., at 9	Br. 203	Meiklejohn
		L. W., F., at 9	Br. 1	Sheets
		L. Tu., Th., at 10	Br. 203	Gilbert
		L. Tu., Th., at 11	Br. 12, 203	Sheets, Turnbull
		L. W., F., at 11	Br. 203	Harper
		Lab. M., 10 to 12	Br. 202	
		Lab. Tu., 9 to 11	Br. 202	
		Lab. Th., 9 to 11	Br. 202	
		L. F., 8 to 10	Br. 201	
104	3	L. M., at 10	Br. 205	Svensen
		L. Tu., at 11	Br. 205	Williams
		Lab. M., Th., 10 to 12	Ha. 301	
		Lab. Th. F., 1 to 3	Ha. 301	
		Lab. Th., 10 to 12; S., 8 to 10		
		Lab. M., Tu., 1 to 3		
105	3	L. M., Th., at 10	Br. 207	Harper
		L. Tu., F., at 10	Br. 104	Turnbull
		Lab. Tu., 10 to 12	Br. 201	
		Lab. F., 1 to 3	Br. 211	
106	3	L. Tu., Th., at 9	Br. 203	Harper
		L. Tu., Th., at 10	Br. 203	Turnbull
		Lab. M., 10 to 12	Br. 211	
		Lab. F., 1 to 3	Br. 211	
107	3	L. M., Th., at 10	Br. 1	Meiklejohn
		Lab. Tu., 10 to 12	Br. 201	
110		Lab. M., Tu., 10 to 12	Ha. 301	Svenson
		Lab. Th., 10 to 12; F., 9 to 11	Ha. 301	Williams
111	2	Lab. M., Tu., 1 to 3	Br. 102	Williams
		Lab. Th., F., 1 to 3	Br. 102	Williams
113	4	M., Tu., 1 to 4	Ha. 301	Svensen
114	3	Tu., 1 to 4; S., 8 to 11	Ha. 301	Svensen
121	2	W., 1 to 5	Br. 102	Williams
122	2	M., 1 to 5	Br. 102	Williams
123	2	Th., F., 1 to 3	Ha. 301	Turnbull

COLLEGE OF AGRICULTURE

103

Course No.	Hours	Time	Room	Instructor
125	2	Tu., Th., 8 to 10	Br. 202, 205	Sheets, Gilbert
		W., 1 to 3; S., 8 to 10	Ha. 301, Br. 205	Meiklejohn, Turnbull
125	2	Tu., Th., 8 to 10	Br. 201, 203	Sheets, Gilbert
		W., 1 to 3; S., 8 to 10	Ha. 301; Br. 205	Meiklejohn, Turnbull
127	1½	W., 1 to 4	Br. 203, 211	French
128	1½	W., 1 to 4	Br. 203, 211	French
129	1	S., 8 to 10	Br. 211	Sheets
130	2	S., 8 to 11	Br. 101	Sheets
131-132	3	M., Tu., 1 to 4	Br. 211	French
137-138	1	Th., 10 to 12	Br. 202	Turnbull

ENGLISH

101-104	2	Sections for Agriculture		
		M., F., at 8	Ph. 102	
		M., F., at 10	Ph. 102	
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 3	Ph. 102	
104-101	2	W., F., at 8	Ph. 304	
		M., F., at 8	Ph. 204	
		S., 8 to 10	Ph. 204	Cooper
105-106	2	Tu., Th., at 11	Ph. 302	Beck
107-108	2	Tu., Th., at 11	Ph. 202	Graves
111-112	2	Tu., at 3; Th., 3 to 5	Ph. 304	Ketcham
121-122	2	Tu., Th., at 1	Ph. 304	Ketcham
121-122	2	Tu., Th., at 2	Ph. 304	Ketcham
121-122	2	Tu., Th., at 10	Ph. 304	Ketcham
124	2	Tu., Th., at 11	Ph. 304	Ketcham
125-126	2	Tu., Th., at 9	Ph. 304	Ketcham
127-128	2	Tu., Th., at 11	Ph. 204	McKnight
131-133	3	M., W., F., at 9	Ph. 104	Cooper
131-133	3	M., W., F., at 11	Ph. 204	
131-133	3	Tu., Th., S., at 8	Ph. 104	Beck
131-133	3	S., 10 to 12	Ph. 204	Cooper
133-131	3	M., W., F., at 8	Ph. 202	Taylor

ENGLISH—Continued

Course No.	Hours	Time	Room	Instructor
133-131	3	M., W., F., at 1	Ph. 202	Graves
135-136	2	Tu., Th., at 2	Ph. 204	Cooper
137-138	2	Tu., Th., at 11	Ph. 102	Denney
141-142	3	M., Tu., Th., at 10	Ph. 202	Taylor
151-152	3	M., W., F., at 1	Ph. 104	McKnight
153-154	3	M., W., F., at 3	Ph. 104	McKnight
155-156	3	M., W., F., at 9	Ph. 202	Taylor
157-158	3	M., W., F., at 2	Ph. 202	Graves
165-166	3	Tu., Th., F., at 10	Ph. 204	McKnight
167-168	3	M., W., F., at 11	Ph. 202	Denney
169-170	2	Tu., Th., at 1	Ph. 204	Cooper
181-182	2	M., F., at 10	Ph. 104	Denney
201-202	2	W., 4 to 6	L. 105	Graves
205-206	2	M., 4 to 6	L. 104	Denney
207-208	2	Tu., 4 to 6	L. 104	Taylor
209-210	2	F., 4 to 6	L. 105	McKnight
213-214	2	Th., 4 to 6	L. 104	Cooper
219-220	2	Th., 4 to 6	L. 105	Denney

EUROPEAN HISTORY

101-102	3	M., W., F., at 8	U. 201	Perkins
101-102	3	M., W., F., at 8	U. 202	Harris
101-102	3	M., W., F., at 9	U. 201	Perkins
101-102	3	M., W., F., at 11	U. 202	Siebert
101-102	3	M., W., F., at 11	U. 313	Harris
101-102	3	M., W., F., at 1	U. 201	McNeal
101-102	3	M., W., F., at 2	U. 201	McNeal
101-102	3	Tu., Th., F., at 10	U. 202	Harris

FORESTRY

101-102	2	Tu., Th., at 8	H. F. 108	Lazenby
103	2	M., F., at 10	H. F. 108	Pflueger
104	3	M., F., at 10; Th., 1 to 3	H. F. 108	Pflueger
105	3	Tu., Th., at 9; F., 1 to 4	H. F. 108	Sherer
106	3	M., F., at 9; M., 1 to 4	H. F. 108	Sherer
107	4	M., W., F., at 9; M., 1 to 4	H. F. 108	Pflueger

Course No.	Hours	Time	Room	Instructor
111-112	2	Tu., Th., at 10	H. F. 108	Scherer, Pflueger
113-114	2	Tu., Th., at 11	H. F. 108	Lazenby
116		Tu., Th., at 9; F., at 1 Lab. F., 2 to 5	H. F. 108	Scherer
117-118	1	F., at 8	H. F. 202	All instruc- tors
119-120	3 to 5	To be arranged		All instruc- tors
121	3	M., W., at 8; Tu., 1 to 4	H. F. 108	Pflueger
122	4	M., W., F., at 11; F., 1 to 4	H. F. 108	Pflueger
123	4	M., W., F., at 11; Th., 1 to 4	H. F. 108	Pflueger
124	2	Tu., Th., at 11	H. F. 107	Pflueger
126	3	M., W., at 8; Tu., 1 to 4	H. F. 107	Scherer
127	2	To be arranged	H. F.	
151-152		To be arranged	H. F.	Lazenby
153-154		To be arranged	H. F.	Scherer
155		To be arranged	H. F.	Scherer
156		To be arranged	H. F.	Scherer
157-158		To be arranged	H. F.	Lazenby
159-160		To be arranged	H. F.	Lazenby

GEOLOGY

101-102	3	M., W., F., at 8	O. 5	Hills
101-102	3	M., W., F., at 9	O. 5	Hills
101-102	3	M., W., F., at 1 Field trips Saturday	O. 105	Bownocker
103	3	M., W., F., at 9	O. 105	Bownocker
104	3	M., W., F., at 9 Field trips Saturday	O. 105	Prosser
105	3 to 5	To be arranged	O. 106	Prosser
106	3	To be arranged	O. 202	Bownocker
107-108	2 to 5	To be arranged	O. 106	Prosser
109-110	2 to 5	To be arranged	O. 202	Bownocker
111	3	Tu., Th., S., 1 to 4; (Field trips)	O. 5	Hills
113-114	2 to 5	To be arranged	O. 106	Prosser, Hills

GEOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
115	1	Th., at 1	O. 202	Bownocker
116	3	To be arranged	O. 5	Hills
141-142	2 to 5	To be arranged	O. 105, 5, 202	Prosser, Bownocker Hills
151 (Agr.)	3	L., M., W., at 2	O. 105	Prosser
		W., F., at 8	O. 105	Verwiebe
		Lab. M., at 8	O. 204	Verwiebe
		M., at 1	O. 204	Verwiebe
		Tu., at 1	O. 204	Verwiebe
		Tu., at 3	O. 204	Verwiebe
		W., at 9	O. 204	Verwiebe
		W., at 2	O. 204	Verwiebe
		Th., at 8	O. 204	Verwiebe
		Th., at 1	O. 204	Verwiebe
		F., at 10	O. 204	Verwiebe
		Field trips Fri. P. M.		
		Sat. A. M.		
151	3	L. M., W., at 2	O. 105	Verwiebe
		W., F., at 8	O. 105	Verwiebe
		Lab. M., at 9	O. 204	Verwiebe
		M., at 10	O. 204	Verwiebe
		Tu., at 2	O. 204	Verwiebe
		Tu., at 3	O. 204	Verwiebe
		W., at 3	O. 204	Verwiebe
		W., at 11	O. 204	Verwiebe
		Field trips Fri. P. M.		
		Sat. A. M.		
153	3	M., W., F., at 11	O. 105	Bownocker
162	4	L. Tu., W., Th., at 11	O. 106	Mark
		Lab. to be arranged	O. 1	Mark
164	3	M., Tu., Th., at 10	O. 204	Verwiebe
166	2	Th., at 11; W., 2 to 4	O. 202	Bownocker, Hills
167	3	M., W., F., at 8	O. 8	Bownocker
168	3	L. Tu., Th., at 11	O. 105	Prosser
		Lab. Tu., at 1	O. 204	Verwiebe
		Th., at 2	O. 204	Verwiebe

Course No.	Hours	Time	Room	Instructor
		F., at 10	O. 204	Verwiebe
		Field trips Fri. P. M.		
		Sat. A. M.		
175-176	2	M., W., at 4	O. 5	Hills
201-202	3 to 5	To be arranged	O. 106	Prosser
203-204	3 to 5	To be arranged	O. 106, 202	Prosser Bownocker

GERMAN

101-102	4	Tu., W., Th., F., at 8	U. 320	
101-102	4	M., Tu., Th., F., at 9	U. 320	
101-102	4	M., Tu., Th., F., at 9	H. F. 107	
101-102	4	M., Tu., Th., F., at 10	U. 320	
101-102	4	M., Tu., Th., F., at 10	U. 406	
101-102	4	M., Tu., Th., F., at 11	U. 320	
101-102	4	M., Tu., Th., F., at 1	U. 320	
101-102	4	M., Tu., Th., F., at 2	U. 320	
101-102	4	Tu., W., Th., F., at 3	U. 320	
101-102	4	M., Tu., W., Th., at 4 for teachers only	U. 310	
102-103	4	Tu., W., Th., F., at 8	U. 321	
101	4	Tu., W., Th., F., at 8	H. F. 106	
103-104	4	Tu., W., Th., F., at 8	U. 319	
103-104	4	M., Tu., Th., F., at 9	U. 319	
103-104	4	M., Tu., Th., F., at 9	H. F. 106	
103-104	4	M., Tu., Th., F., at 10	U. 319	
103-104	4	M., Tu., Th., F., at 10	H. F. 106	
103-104	4	M., Tu., Th., F., at 11	U. 406	
103-104	4	M., Tu., Th., F., at 1	U. 319	
103-104	4	M., Tu., Th., F., at 2	U. 319	
103-104	4	Tu., W., Th., F., at 3	H. F. 106	
103-104	4	Tu., W., Th., F., at 3	U. 319	
104	4	Tu., W., Th., F., at 8	H. F. 106	
106	4	M., Tu., Th., F., at 9		
106	4	M., Tu., Th., F., at 10	H. F. 106	
106	4	Tu., W., Th., F., at 3	H. F. 107	
107-108	4	M., Tu., Th., F., at 10	U. 309	Busey
107-108	4	M., Tu., Th., F., at 10	U. 410	Kotz
115-116	2	Tu., Th., at 9	U. 201	Kotz

GERMAN—Continued

Course No.	Hours	Time	Room	Instructor
115-116	2	M., F., at 10	H. F. 112	Keidel
117-118	2	Tu., Th., at 11	U. 209	Thomas
119-120	2	Tu., Th., at 10	L. 107	Lewisohn
119-120	2	Tu., Th., at 3	U. 308	Keidel
131-132	2	Tu., Th., at 9	U. 400	Eisenlohr
131-132	2	Tu., Th., at 11	U. 319	Busey
133-134	2	M., Tu., Th., F., at 9	U. 401	Keidel
151-152	3	M., W., F., at 11	U. 319	Evans
157-158	2	Tu., Th., at 11	U. 321	Eisenlohr
161-162	2	To be arranged		Thomas
163-164	2	Tu., Th., at 4	L. 107	Lewisohn
171-172	2	Tu., Th., at 2	U. 321	Eisenlohr
173-174	2	Tu., Th., at 3	U. 321	Evans
175-176	2	M., W., at 3	U. 321	Barrows
177-178	2	W. 4 to 6	L. 317	Busev
201-202	2	To be arranged	L. 317	Eisenlohr
209-210	2	To be arranged	L. 317	Keidel
215-216	2	Tu., 4 to 6	L. 317	Evans

HISTORY AND PHILOSOPHY OF EDUCATION

101-102	3	M., W., F., at 11	P. 9	Anderson
101-102	3	M., Th., F., at 4	P. 9	Anderson

HOME ECONOMICS

101-102	5	L. Tu., Th., at 9	Ha. 100	White
		W., F., at 11	Ha. 100, 206	White
		Q. Tu., at 11	Ha. 100	White
		Tu., at 2	Ha. 100	White
		Th., at 11	Ha. 100	White
		Th., at 10	Ha. 100	White
		F., at 8	Ha. 100	White
		Lab. M., F., 2 to 4	Ha.	White
		Tu., Th., 2 to 4	Ha.	White
		Tu., Th., 8 to 10	Ha.	White
		Tu., Th., 10 to 12	Ha.	White
		M., F., 10 to 12	Ha.	White

Course No.	Hours	Time	Room	Instructor
102	5	L. M., F., at 10	Ha. 206	White
		Q. Th., at 1	Ha. 100	White
		Lab. Tu., Th., 10 to 12	Ha.	
104	3	M., W., F., at 9	Ha. 206	Denton
104	3	M., W., F., at 9	Ha. 100	Denton
104	3	M., W., F., at 1	Ha. 206	Denton
105-106	2 to 5	L. Th., at 2	Ha. 100	Van Meter
		Lab to be arranged	Ha.	Van Meter
108-109	2	Tu., at 8; 1 hr. to be arranged	Ha. 100	Van Meter
110	4	L. Tu., Th., at 9	Ha. 206	Denton
		Lab. Tu., Th., 10 to 12	Ha.	Denton
		M., F., 10 to 12	Ha.	Denton
110	4	L. Tu., Th., at 9	Ha. 206	Denton
		Tu., Th., at 11	Ha. 206	Denton
		Lab. Tu., Th., 10 to 12	Ha.	Denton
		M., F., 10 to 12	Ha.	Denton
111-112	2	L. M., at 9	H. F. 203	Walker
		Tu., at 3	Ha. 206	
		W., at 11	Ha. 206	
		Th., at 8	Ha. 206	
		Th., at 3	Ha. 206	
		Lab. Tu., 8 to 10		Walker
		W., 8 to 10		Walker
		F., 8 to 10		Walker
		S., 8 to 10		Walker
		Tu., 1 to 3		Walker
		W., 1 to 3		Walker
		Th., 8 to 10		Walker
		Th., 1 to 3		Walker
		F., 1 to 3		
112	2	L. F., at 9	H. F. 203	Tucker
		Lab. M., 1 to 3	Ha.	
113	3	L. Th., at 3	H. F. 203	Hathaway
		Lab. M., F., 10 to 12	H. F. 204	Hathaway
		M., F., 1 to 3	H. F. 204	Hathaway
		Tu., Th., 10 to 12	H. F. 204	Hathaway
113	3	L. Th., at 3	H. F. 203	
		Lab. M., F., 10 to 12	H. F. 204	

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
116	3	L. W., at 11	H. F. 203	Hathaway
		Lab. M., F., 1 to 3	H. F. 204	
		Tu., Th., 10 to 12	H. F. 204	
118	3	L. W., at 8	Ha. 100	Tucker
		Lab. M., F., 10 to 12	Ha. 100	Tucker
118	3	L. M., at 2	Ha. 100	Tucker
		Lab. Tu., Th., 3 to 5	Ha.	
		L. Th., at 8	Ha. 100	
		Lab. M., F., 10 to 12	Ha. 100	
119	3	M., W., F., at 9	Ha. 100	Walker
		M., W., F., at 1	Ha. 100	Walker
119	3	M., W., F., at 9	Ha. 206	Walker
121	3	L. Th., at 8	Ha. 100	White
		Lab. M., F., 10 to 12	Ha.	White
201-202	2 to 5	To be arranged	Ha.	White

HORTICULTURE

101	4	M., W., F., at 11; Tu., 10 to 12	H. F. 113	Davis
103-104	4	M., W., F., at 8	H. F. 113	Mont- gomery
		Lab. M., 1 to 3; W., 1 to 3		Mont- gomery
105-106	4	M., W., F., at 9; F., 1 to 3	H. F. 112	Paddock
107	3	M., W., F., at 11	H. F. 112	Paddock
108	3	M., W., F., at 11	H. F. 113	Mont- gomery
109-110	3	L. Th., at 11	H. F. 112	
		Lab to be arranged		Paddock
118	4	L. M., W., F., at 8	H. F. 206	Davis
		M., W., F., at 11	H. F. 206	Paddock
		Lab. S., 8 to 10	H. F.	Paddock
		M., 1 to 3	H. F.	Paddock
		Tu., 1 to 3	H. F.	Paddock
		W., 1 to 3	H. F.	Paddock
119	3	To be arranged		Mont- gomery

Course No.	Hours	Time	Room	Instructor
120	4	M., W., F., at 11; Tu., 10 to 12	H. F. 112	Davis
121-122	4	L. M., W., F., at 9 Lab. M., 1 to 3	H. F. 205 H. F.	Davis
131-132	4	M., W., F., at 9; Th., 8 to 10	H. F. 113	Mont- gomery
133	3	Tu., at 11; Tu., 1 to 5	H. F. 113	Mont- gomery

MATHEMATICS

121	3	L. Tu., Th., at 9	U. 311	Kuhn
121	3	L. Tu., Th., at 10	U. 412	West
121	3	L. Tu., Th., at 1	U. 310	Arnold
		Tu., 2 to 4	U. 412	Kuhn
		W., 2 to 4	U. 412	Swartzel
		Th., 2 to 4	U. 412	West

METEOROLOGY

101-102	2	Th., F., at 4	T. 205	Smith
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MILITARY SCIENCE AND TACTICS

1-1	1	M., W., F., at 11; Th., at 4	Armory	Converse
	1	M., Tu., W., Th., at 4	Armory	Converse
2-2	1	M., W., F., at 11	Armory	Converse
	1	M., Tu., W., at 4	Armory	Converse

PHYSICAL EDUCATION**For Men**

101	1	L. M., at 10	Ph. 200	Dr. Wingert
		W., at 1	Ph. 200	
		W., at 3	Ph. 200	
		F., at 3	Ph. 200	
		Lab. one period	Gym.	
		M., at 9, 10, 11, 2 or 3		
		Tu., at 9, 10, 11, 2 or 3		
		W., at 9, 11, 2 or 3		
		Th., at 9, 10, 11, 2 or 3		
		F., at 9, 10, 11, 2, 3, or 4		

PHYSICAL EDUCATION—Continued

Course No.	Hours	Time	Room	Instructor
102	1	Any two days M., at 9, 10, 11, 2 or 3 Tu., at 9, 10, 11, 2 or 3 W., at 9, 11, 2 or 3 Th., at 9, 10, 11, 2 or 3 F., at 9, 10, 11, 2, 3 or 4	Gym.	Wingert, Ohlson, Bartholomew

For Women

		Any three days		
Freshmen	1	M., Tu., Th., F., at 9	Gym.	Bocker, Sauer
		M., Tu., Th., F., at 10	Gym.	Bocker, Sauer
Sophomores	1	W., 9 and 2; other days at 9	Gym.	Bocker, Sauer
		M., Tu., W., Th., F., at 11	Gym.	Bocker, Sauer
Advanced		L. Tu., Th., F., at 1	Gym.	
		Practice M., W., at 1	Gym.	

PHYSICS

101	6	Daily at 11; S., 8 to 11	Ph. 205	
103-104	4	M., W., F., at 8	Ph. 205	
		W., 2 to 4	Ph. 100	Earhart
105-106	4	L. Tu., Th., at 10	Ph. 205	Blake
		Tu., Th., at 1	Ph. 205	Blake
		Lab. Tu., Th., 8 to 10 or 2 to 4	Ph. 100	Blake
108	3	M., W., at 9; F., 8 to 10	Ph. 205, 100	

PHYSIOLOGY

101-102	3	M., W., F., at 8	Bio. 200	Seymour
101-102	3	M., W., F., at 8	Bio. 100	Durrant
101-102	3	M., W., F., at 9	Bio. 100	Bleile

Course No.	Hours	Time	Room	Instructor
101-102	3	M., W., F., at 9	Bio. 200	
101-102	3	M., W., F., at 2	Bio. 100	Seymour
101-102	3	M., W., F., at 3	Bio. 101	Seymour
101-102	3	Tu., Th., S., at 8	Bio. 200	Wright
101-102	3	Tu., Th., S., at 9	Bio. 100	Seymour
104	3	Th., F., 1 to 4	Bio. 208	Bleile, Seymour

PSYCHOLOGY

101-102	3	M., W., F., at 8	U. 400
101-102	3	M., W., F., at 9	U. 400
101-102	3	M., W., F., at 11	U. 400
101-102	3	M., W., F., at 1	U. 400
101-102	3	M., W., F., at 2	U. 400
101-102	3	M., W., F., at 3	U. 400
101-102	3	Tu., Th., S., at 11	U. 400
102-101	3	M., W., F., at 3	U. 406

ROMANCE LANGUAGES**French**

101-102	4	Tu., W., Th., F., at 8	U. 303	Bruce
101-102	4	M., Tu., Th., F., at 9	U. 301	Ditchy
101-102	4	M., Tu., Th., F., at 10	U. 401	Hamilton
101-102	4	M., Tu., Th., F., at 10		Chapin
101-102	4	M., Tu., Th., F., at 10		Moore
101-102	4	M., Tu., Th., F., at 11	U. 303	Bowen
101-102	4	M., Tu., Th., F., at 11	U. 301	
101-102	4	M., Tu., Th., F., at 11		Peirce
101-102	4	M., T., Th., F., at 1	U. 302	Moore
101-102	4	M., Tu., Th., F., at 2	U. 301	Hamilton
101-102	4	Tu., W., Th., F., at 3	U. 301	
101	4	M., Tu., Th., F., at 1	U. 309	
103-104	4	Tu., W., Th., F., at 8	U. 302	Chapin
103-104	4	M., Tu., Th., F., at 9	U. 303	Moore
103-104	4	M., Tu., Th., F., at 10	U. 302	Bruce
103-104	4	M., Tu., Th., F., at 10	U. 313	
103-104	4	M., Tu., Th., F., at 11	U. 302	Ditchy
103-104	4	M., Tu., Th., F., at 11		Moore

ROMANCE LANGUAGES—Continued

Course No.	Hours	Time	Room	Instructor
103-104	4	Tu., W., F., at 4 For teachers only	U. 301	
106	4	M., Tu., Th., F., at 10	U. 308	Chapin
107-108	2	Tu., Th., at 8	U. 301	Ingraham
107	2	Tu., Th., at 9	U. 209	Peirce
109-110	3	M., W., F., at 8	U. 316	Peirce
109-110	3	M., Th., F., at 10	U. 301	Peirce, Bowen
111-112	3	M., W., F., at 8	U. 301	Ingraham
113-114	2	Tu., Th., at 9		Bruce
117-118	2	Tu., 3 to 5	U. 305	Bowen
119-120	2	M., 3 to 5	U. 305	Bowen
122	2	To be arranged		Bowen

Italian

101-102	4	M., Tu., Th., F., at 2	U. 303	Bruce
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Spanish

101-102	4	M., Tu., Th., F., at 9	U. 302	Hamilton
101-102	4	M., Tu., Th., F., at 9		Chapin
101-102	4	M., Tu., Th., F., at 10	U. 303	Nathan
101-102	4	M., Tu., Th., F., at 10	U. 400	Ditchy
101-102	4	M., Tu., Th., F., at 11		Nathan
101-102	4	M., Tu., Th., F., at 2	U. 302	Ditchy
101	4	M., Tu., Th., F., at 1	U. 303	Hamilton
103-104	4	M., Tu., Th., F., at 1	U. 301	Ingraham
107-108	2	Tu., Th., at 10	U. 305	Ingraham
110	4	To be arranged		Chapin
201-202	2	To be arranged	L. 311	Bowen
205-206	2	To be arranged	L. 311	Bruce
207-208	3 to 10	To be arranged	L. 311	Bowen
209-210	3 to 5	To be arranged	L. 311	Ingraham
211-212	2	To be arranged		Ingraham

RURAL ECONOMICS

101-101	2	M., at 10; W., 1 to 4	H. F. 205	Phillips
103	4	M., W., F., at 11	T. 109	

Course No.	Hours	Time	Room	Instructor
		M., W., F., at 8	T. 112	
		S., 8 to 12	T. 109	Phillips
		Tu., 1 to 4	T. 109	
		Th., 1 to 4	T. 109	
104	3	M., W., F., at 11	T. 112	Falconer, Phillips
105	3	M., W., F., at 3	T. 109	Price
107-108	5	To be arranged		Price, Falconer
110	3	M., W., F., at 9	T. 204	Price
111-112	5	To be arranged		Falconer

SCHOOL ADMINISTRATION

122	2	Tu., Th., at 10	U. Base	Bricker
127	2	M., W., at 2	U. Base	Bricker

SHOPWORK

101	2	M., 8 to 11; F., 8 to 10	Ha.	Beem, Denman
		Tu., 8 to 10; Th., 8 to 11	Ha.	
		Tu., Th., 10 to 12; W., at 9	Ha.	
		M., 1 to 3; Tu., 1 to 4	Ha.	
		Th., 1 to 4; F., 1 to 3	Ha.	
		W., 1 to 3; S., 8 to 11	Ha.	
		Tu., 8 to 11; Th., 8 to 10	Ha.	
101	2	M., 8 to 10; F., 8 to 11	Ha.	
		Tu., Th., 8 to 10; W., at 9	Ha.	
		Tu., 9 to 12; Th., 10 to 12	Ha.	
		Th., 1 to 4; F., 1 to 3	Ha.	
		M., 2 to 4; Tu., 1 to 4	Ha.	
		W., 1 to 3; S., 8 to 11	Ha.	
103	2	L. M., at 8	Ha. 206	
		M., at 10	Ha. 204	
		Th., at 8	Ha. 204	
		Tu., at 3	Ha. 204	
		F., at 1	Ha. 206	

SHOPWORK—Continued

Course No.	Hours	Time	Room	Instructor
		Lab. M., F., 8 to 10		
		Tu., Th., 8 to 10		
		Tu., Th., 10 to 12		
		M., Tu., 1 to 3		
		M., Tu., 3 to 5		
		Th., F., 1 to 3		
		W., 8 to 10; S., 10 to 12		
103	2	L. M., at 2	Ha. 206	Foust
		Tu., at 3	Ha. 204	Foust
		W., at 8	Ha. 206	Foust
		F., at 3	Ha. 206	Foust
		Lab. M., F., 8 to 10	Ha.	Foust
		Tu., Th., 8 to 10	Ha.	Foust
		Tu., Th., 10 to 12	Ha.	Foust
		W., 8 to 10; S., 10 to 12	Ha.	Foust
		M., Tu., 1 to 3	Ha.	Foust
		Th., F., 1 to 3	Ha.	Foust
		M., Tu., 3 to 5	Ha.	Foust

VETERINARY MEDICINE

151-152	3	M., Tu., Th., at 10	V. L. 101	White, Lambert
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ZOOLOGY AND ENTOMOLOGY

101-102	3	L. M., F., at 9	B. Z. 67,	Osborn,
		M., F., at 1	109,	Barrows,
		Tu., Th., at 8	209	Krecker,
		Tu., Th., at 9		Kostir,
		Tu., Th., at 1		Drake
		Lab. M., 1 to 3	B. Z. 65, 69	Barrows,
		Tu., 10 to 12	B. Z. 65, 69	Krecker
				Kostir,
				Assistants

Course No.	Hours	Time	Room	Instructor
		Tu., 1 to 3	B. Z. 65, 69	
		W., 8 to 10	B. Z. 65, 69	
		W., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10	B. Z. 65, 69	
		Th., 1 to 3	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	
		S., 10 to 12	B. Z. 65, 69	
101	3	Tu., Th., at 3	B. Z. 67, 65	
		Lab., S., 8 to 10		
107-108	3	L. M., F., at 10	B. Z. 100	Osborn, Metcalf
		Tu., Th., at 9	B. Z. 100	
		Lab. Tu., 8 to 10	B. Z. 65, 69	
		Th., 10 to 12	B. Z. 65, 69	Metcalf, Assistants
		S., 8 to 10	B. Z. 65, 69	
112	3	L. Tu., Th., at 11	B. Z. 207	Hine
		Lab. Th., 1 to 4	B. Z. 207	Hine
113-114	4	L. M., W., at 3	B. Z. 109	Osborn
		Lab. M., W., 1 to 3	B. Z. 107	Osborn, Hine Drake
121-122	3 to 5	L. Tu., at 1	B. Z. 111	Kostir
		Lab. Tu., 2 to 4; Th., F., 1 to 3	B. Z. 111	Kostir
129	2 to 5	Tu., Th., at 10	B. Z. 67	Barrows
130	2 to 5	Tu., Th., at 10	B. Z. 67	Barrows
131-132	3	Tu., Th., F., at 3	B. Z. 109	Osborn, Barrows, Krecker
137-138	3 to 5	L. Tu., Th., at 1	B. Z. 107	Osborn
		Lab. M., W., F., 1 to 3	B. Z. 107	Osborn
139-140	2	L. M., at 10	B. Z. 207	Hine
		L. Tu., 1 to 4	B. Z. 207	Hine
141-142	5 to 10	To be arranged	B. Z.	Osborn
143-144	1	Tu., at 4	B. Z. 109	Osborn
145-146	2	To be arranged	B. Z.	Osborn
147	2	Tu., Th., at 11	B. Z. 209	Hine
148	2	Tu., Th., at 10	B. Z. 109	Osborn

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
149-150	3 to 5	L. Tu., Th., at 1 Lab. Th., 2 to 5	B. Z. 211	Metcalf
151-152	3	L. W., at 1 Lab. M., 1 to 4; W., 2 to 5	B. Z. 211	Metcalf
153-154	2	Tu., Th., at 11	B. Z. 67	Barrows
155-156	3	M., W., F., at 8	B. Z. 207	Hine
157-158	3 to 5	L. M., F., at 10 Lab. W., 1 to 4	B. Z. 111	Krecker
91- 92	4	M., W., F., at 9	B. Z. 207	Hine

The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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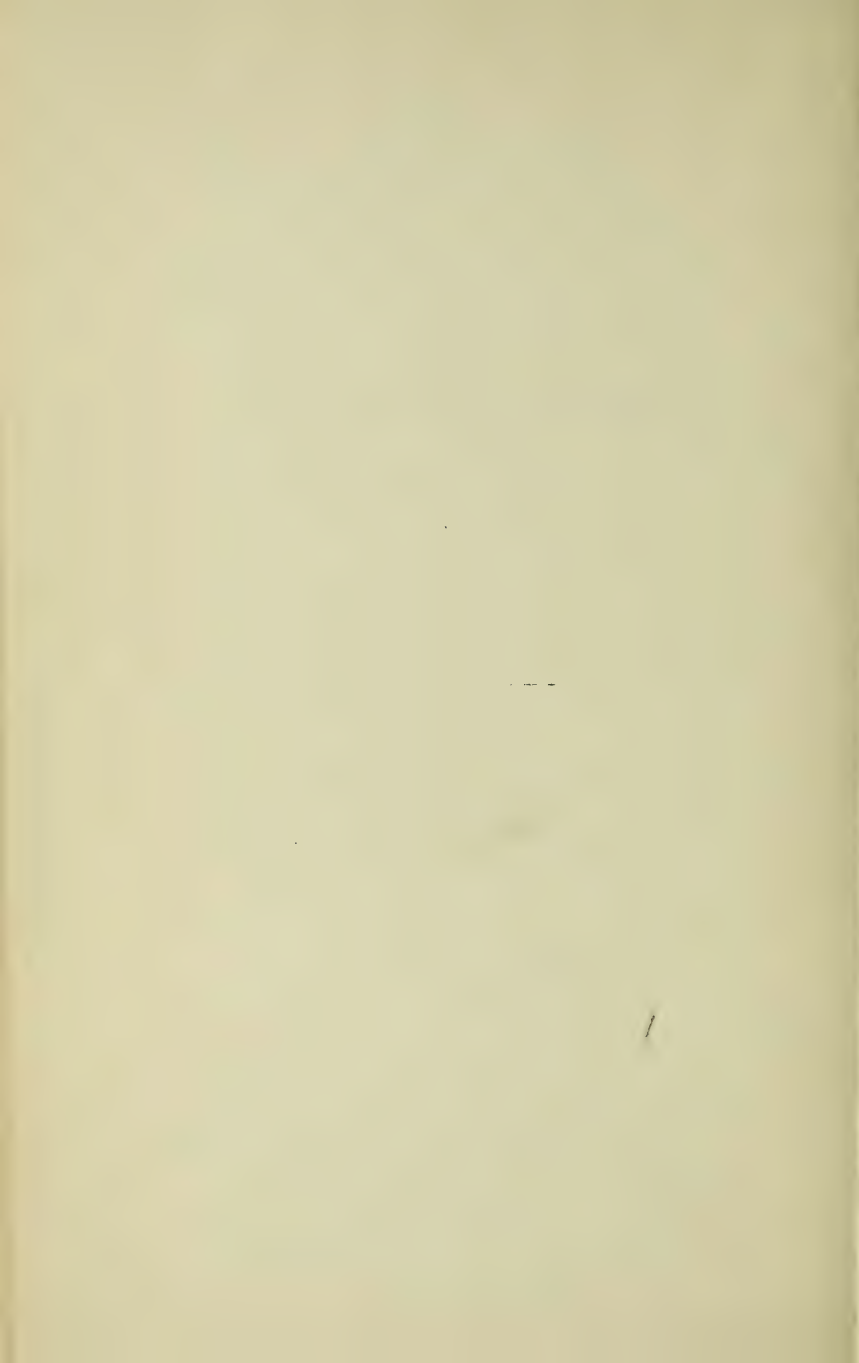
The Ohio State University Bulletin
VOLUME XX FEBRUARY, 1916 NUMBER 21

COLLEGE OF AGRICULTURE

1916 - 1917

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

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UNIVERSITY CALENDAR

1916

Entrance examinations, Tuesday to Saturday, June 20 to 24, 8 a. m.

Summer Session, June 19 to August 11.

Entrance examinations, Tuesday to Saturday, September 12 to 16, 8 a. m.

Registration Day—First Semester—Tuesday, September 19.

President's Annual Address, Friday, September 22, 11 a. m.

Latest date for registration of candidates for a degree at the Commencement of June, 1917, October 1.

Registration Day, Short Courses in Agriculture—First Term—Tuesday, October 17.

Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 22.

Thanksgiving recess begins November 29, 1 p. m., and ends December 5, 8 a. m.

Christmas recess begins Thursday, December 21, 6 p. m.

1917

Christmas recess ends Wednesday, January 3, 8 a. m.

Registration Day, Short Courses in Agriculture—Second Term—Wednesday, January 3.

Final examinations, Thursday, January 25, to Thursday, February 1.

First semester ends Thursday, February 1, 6 p. m.

Registration Day—Second Semester—Tuesday, February 6.

Washington's Birthday, Thursday, February 22.

Close of second term, Short Courses in Agriculture, Friday, March 16.

Mid-semester reports to the Deans, Saturday, March 31.

Easter recess, Thursday, April 5, 6 p. m., to Tuesday, April 10, 8 a. m.

Memorial Day, Wednesday, May 30.

Competitive Drill—Cadet Regiment—Saturday, June 2.

Commencement, Tuesday, June 5.

Final examinations, Wednesday, June 6, to Wednesday, June 13.

Entrance examinations, Tuesday, June 19, to Saturday, June 23, 8 a. m.

THE OHIO STATE UNIVERSITY

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Residence: 375 W. Eighth Ave.—16605

Secretary.....VERLE C. SMITH

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Residence: 422 W. Eighth Ave.—16495

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises eleven colleges and a graduate school, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Engineering
College of Agriculture	College of Homoeopathic
College of Arts, Philosophy and Science	Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1916-17.

[NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.]

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this college consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS IN AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

Students who do not present the recommended units in foreign language will be required to elect foreign language in their Freshman year.

REQUIREMENTS IN HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in

mathematics; one in history; one in physics; and four at large.

Students who do not present these units will be required to carry courses in the University to make up the deficiency and this may delay their graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

No student under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

ADMISSION TO SHORT COURSES

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the Principal or Superintendent of the school last attended, recommending him to the University.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College except the curriculum in Home Economics, is made uniform.

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

First Semester

Chemistry	(105 or 109)	4
Zoology	(101)	3
English	(101)	2
*Mathematics	(107)	3
*Drawing	(125)	2
*Shopwork	(101)	2
Survey of Agriculture		1
Military Drill		1
Physical Training		1

Second Semester

Chemistry	(106 or 110)	4
Zoology	(102)	3
English	(104)	2
*Physics	(109)	3
*Geology	(151)	3
*Shopwork	(103)	2
Military Drill		1
Physical Training		1

*Students may substitute 4 hours of German, French or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students expecting to major in Forestry or Landscape Architecture should consult the outlined curricula for these courses. (See pages 22, 23, and 24.)

THE OHIO STATE UNIVERSITY

SECOND YEAR

First Semester		Second Semester	
Agricultural Chemistry	(103) 5	Soils	(152) 5
Botany	(101) 4	Botany	(102) 4
Military Drill	1	Military Drill	1

And at least 7 hours from the following:

Physiology	(101) 3	Physiology	(102) 3
Economics	(135) 3	Economics	(136) 3
Entomology	(107) 3	Entomology	(108) 3
Foreign Language	4	Foreign Language	4
Animal Husbandry	(101) 4	Animal Husbandry	(102) 4
Horticulture	(101) 4	Horticulture	(120 or 118) 4
*Farm Crops	(101) 4	*Agricultural Engineering	(101) 4
*Dairying	(101) 4	Dairying	(102) 4
Geology	(105) 3	Geology	(106) 3
English (105, 121, or 131)	2 or 3	English (106, 122, or 133)	2 or 3
Anatomy	(101) 3	Meteorology	(101) 2
		Anatomy	(102) 3

*These subjects may be taken in either semester.

THIRD YEAR

First Semester		Second Semester	
Major subject	(at least) 4	Major subject	(at least) 4
Minor elections	13	Minor elections	13

FOURTH YEAR

Major subject	(at least) 4	Major subject	(at least) 4
Minor elections	13	Minor elections	13

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 135-136, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural subjects must take Economics 135-136, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Forestry: Students majoring in Forestry must follow the curricula as outlined on pages 12 and 13.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on pages 13 and 14.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum as outlined on page 15.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine, and Dentistry.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and thirty-six semester hours, exclusive of military drill and physical training, the student will be recommended for the degree, Bachelor of Science.

THE OHIO STATE UNIVERSITY

FORESTRY

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Forestry should take Botany 101-102 in place of Zoology 101-102; and Modern Language 101-102 in place of Shopwork 101-103 and English 101-104.

SECOND YEAR

First Semester		Second Semester	
Forestry	(101) 2	Forestry	(102) 2
Introduction		Silvics	
Entomology	(155) 3	Entomology	(156) 3
Botany	(110) 2	Botany	(142) 2
General Dendrology		Dendrology of Conifers	
Civil Engineering	(131) 5	Civil Engineering	(132) 5
Surveying		Forestry Surveying	
*Modern Language (101 or 103)	4	*Modern Language (102,	
French, German or Spanish		104 or 106)	4
English	(101) 2	French, German or Spanish	
Military Drill	1	English	(104) 2
		Military Drill	1

*Students electing the course in Forestry in their second year and having credit for Modern Language 101-102 should take Modern Language 103-104 or 106. If no previous language credit has been secured, they should take Modern Language 101-102.

THIRD YEAR

Forestry	(105) 3	Forestry	(106) 3
Silviculture		Silviculture	
Botany	(125) 4	Forestry	(104) 3
Physiological Ecology		Arboriculture	
Forestry	(111) 2	Forestry	(112) 2
Protection		Forest Craft	
Forestry	(107) 4	Forestry	(116) 4
Mensuration		Forest Products	
Forestry	(115) 2	Forestry	(124) 2
Grazing		Finance and Administration	

Not less than two hours throughout the year from the following:

Zoology	(113) 4	Zoology	(114) 4
Engineering Drawing	(137) 2	Engineering Drawing	(138) 2
Economics	(135) 3	Economics	(136) 3
American History	(101) 3	American History	(102) 3
Botany	(145) 2	Meteorology	(101) 2
Botany	(113) 3	Botany	(146) 2
		Zoology	(150) 3
		Horticulture	(118) 4

FOURTH YEAR

First Semester			Second Semester		
Forestry	(121)	3	Forestry	(122)	3
Lumbering			Forest Utilization		
Forestry	(123)	4	Forestry	(128)	3
Forest Management			Forest Organization		
Botany	(117)	3	Botany	(118)	3
Field Ecology			Field Ecology		
Forestry	(125)	3	Forestry	(126)	3
Silviculture			Silvicultural Problems		
Forestry	(113)	2	Forestry	(114)	2
Forest Economics			Forest Policy		
Forestry	(117)	1	Forestry	(118)	1
Seminar			Seminar		
Elective		2	Elective		2 or 3

Unless the candidate for a degree has had a full equivalent, not less than one summer of practical work in the woods is required before graduation.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103.

SECOND YEAR

First Semester			Second Semester		
Architecture	(131)	2	Art	(141)	2
Civil Engineering	(131)	5	English	(131)	3
Engineering Drawing	(108)	3	Horticulture	(154)	3
Horticulture	(151)	2	Modern Language		4
Modern Language		4	Horticulture	(152)	2
Military Drill		1	Architecture	(132)	2
			Military Drill		1

THIRD YEAR

Architecture	(133)	3	Architecture	(136)	3
History			History		
Art	(133)	2	Art	(136)	2
Economics	(135)	3	Economics	(136)	3
Civil Engineering	(133)	1	Horticulture	(162)	4
Horticulture	(157)	3	Horticulture	(158)	3
Landscape Design			Landscape Design		
Entomology	(155)	3	Elective		2 or 3
Elective		2 or 3			

FOURTH YEAR

Architecture	(113)	2	Botany	(116)	3
Art	(142)	3	Pathology		
Horticulture	(159)	4	Horticulture	(172)	1
Horticulture	(164)	3	Landscape Seminar		
Civic Design			Horticulture	(160)	4
Horticulture	(169)	3	Advanced Design		
Psychology	(101)	3	Horticulture	(170)	3
			Horticulture	(166)	3
			Horticulture	(165)	3

HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Art	(119)	1	English	(104)	2
English	(101)	2	Zoology	(102)	3
Zoology	(101)	3	or		
or			Botany	(102)	4
Botany	(101)	4	Modern Language (102, 104 or 106)		4
Modern Language (101 or 103)		4	French or German		
French or German			Home Economics	(112)	2
Home Economics	(111)	2	Physical Training		1
Physical Training		1			

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic			Home Economics	(102)	5
Home Economics	(101)	5	Physiology	(102)	3
Physiology	(101)	3	Modern Language (104 or 106)		4
Modern Language	(103)	4	French or German		
French or German			Art	(141)	2
Art	(131)	2	Physical Training		1
Physical Training		1			

THIRD YEAR

Economics	(135)	3	Economics	(136)	3
Bacteriology	(107)	4	Home Economics	(104)	3
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Bibliography	(103)	½	Home Economics	(118)	3
Engineering Drawing	(127)	1½	Engineering Drawing	(128)	1½

Electives to make at least 15 hours throughout the year.

FOURTH YEAR

Sociology	(101)	3	Sociology	(102)	3
Home Economics	(105)	2 to 5			
Home Economics	(119)	3			

Electives to make at least 15 hours throughout the year.
Electives for the third and fourth years must include not less

than six hours of English, and for students not offering entrance credit in American history, six hours of American history.

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester		Second Semester	
Entomology	(107) 3	Entomology	(108) 3
Botany	(101) 4	Botany	(102) 4
Modern Language	4	Modern Language	4
French, Spanish or German		French, Spanish or German	
Farm Crops	(101) 4	Military Drill	1
Agricultural Chemistry	(113) 2	Elective	6
Military Drill	1		

THIRD YEAR

Entomology	(113) 4	Entomology	(114) 4
Entomology	(153) 2	Botany	(116) 3
Bacteriology	(107) 4	Bacteriology	(108) 4
Physiology	(101) 3	Physiology	(102) 3
or		or	
Anatomy	(101) 3	Anatomy	(102) 3
Elective	4 or 5	Architecture	(111) 2
		Elective	2

NOTE:—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(149) 3	Entomology	(112) 3
Entomology	(147) 2	or	
Entomology	(151) 3	Entomology	(150) 3
Elective	9 or 10	Entomology	(148) 2
		Entomology	(152) 3
		Elective	9 or 10

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline on the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 9-11.

ANIMAL HUSBANDRY

- First Year:** Uniform first year
- Second Year:** Animal Husbandry (101) 4 hours, (102) 4 hours
- Third Year:** Animal Husbandry (103) 4 hours, (104) 4 hours
 Animal Husbandry (105) 3 hours, (106) 4 hours
 Animal Husbandry (116) 4 hours
 Animal Husbandry (117) 3 hours, (118) 3 hours
 Veterinary Medicine (151) 3 hours, (152) 3 hours
- Fourth Year:** Animal Husbandry (107) 4 hours, (108) 4 hours
 Animal Husbandry (109) 2 hours, (110) 1 hour
 Animal Husbandry (119) 2 hours, (120) 1 hour
 Animal Husbandry (112) 3 hours, (126) 3 hours
 Animal Husbandry (122) 1 hour
 Animal Husbandry (124) 2 hours

DAIRYING

- First Year:** Uniform first year
- Second Year:** Dairying (101) 4 hours, (102) 4 hours
- Third Year:** Dairying (115) 2 hours, (105) 4 hours
 Dairying (111) 2 hours, (107) 3 hours
 Bacteriology (107) 4 hours, (110) 4 hours
- Fourth Year:** Dairying (113) 2 hours, (110) 2 hours
 Dairying (103) 4 hours, (114) 2 hours
 Dairying (119) 1 hour, (116) 2 hours
 Dairying (120) 1 hour

FLORICULTURE

- First Year:** Uniform first year
- Second Year:** Horticulture (101) 4 hours, (132) 4 hours
- Third Year:** Horticulture (141) 4 hours, (142) 4 hours
 Horticulture (145) 3 hours, (156) 2 hours
- Fourth Year:** Horticulture (143) 3 hours, (146) 4 hours
 Horticulture (147) 3 hours, (148) 3 hours
 Horticulture (144) 3 hours

POMOLOGY AND VEGETABLE GARDENING

- First Year:** Uniform first year
- Second Year:** Horticulture (101) 4 hours, (120) 4 hours
- Third Year:** Horticulture (103) 4 hours, (104) 4 hours
Horticulture (105) 4 hours, (106) 4 hours
- Fourth Year:** Horticulture (109) 3 hours, (110) 3 hours
Horticulture (133) 3 hours, (132) 4 hours
Horticulture (121) 4 hours, (122) 4 hours
Horticulture (131) 4 hours, (146) 4 hours

PLANT PATHOLOGY

- First Year:** Uniform first year
- Second Year:** Botany (120) 3 hours
- Third Year:** Botany (127) 4 hours, (128) 4 hours
Botany (139) 4 hours, (140) 4 hours
- Fourth Year:** Botany (125) 4 hours, (126) 4 hours
Botany (133) 4 hours, (134) 4 hours

RURAL ECONOMICS

- First Year:** Uniform first year
- Second Year:** Economics (135) 3 hours, (136) 3 hours
Rural Economics (101) 2 hours
- Third Year:** Rural Economics (103) 4 hours, (104) 3 hours
- Fourth Year:** Rural Economics (102) 2 hours, (111) 2 hours
Rural Economics (105) 2 hours, (110) 3 hours
Rural Economics (113) 3 hours
Economics (177) 2 hours, (178) 2 hours

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are co-operative between the University and other colleges of the State, and be-

come effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the co-operating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science in Agriculture, B.Sc. (Agr.), from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capitol University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science in Agriculture at the end of five years.

FIRST YEAR

First Semester		Second Semester	
English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Zoology	(101) 3	Zoology	(102) 3
American, European or Industrial History	3	American, European or Industrial History	3
Military Drill	1	Military Drill	1
Physical Training	1	Physical Training	1

SECOND YEAR

English	(131)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	4	Botany	(102)	4
Engineering Drawing	(125)	2	Art		2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(135)	3	Economics	(136)	3
Physics	(103)	4	Physics	(104)	4
Geology		3	Geology		3

Elective 6 or 7 hours the year on approval of adviser.

FOURTH YEAR

Animal Husbandry	4	Choice of any two of these the
Agricultural Chemistry	4	fourth year. Remaining two the
Rural Economics	4	fifth year.
Farm Crops or Soils	4	

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year-----8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Zoology	(101)	3	Zoology	(102)	3
American, European or			American, European or		
Industrial History		3	Industrial History		3
Military Drill		1	Military Drill		1
Physical Training		1	Physical Training		1

SECOND YEAR

English	(131)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	4	Botany	(102)	4
Engineering Drawing	(125)	2	Art	(131)	2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(135)	3	Economics	(136)	3
Physics	(103 or 105)	4	Physics	(104 or 106)	4
Geology	(103)	3	Geology	(104)	3
Zoology	(107)	3	Zoology	(108)	3
or			or		
Botany	(125)	4	Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year.)

Agricultural Chemistry (4 hours throughout the year.)

In addition to these six hours elective throughout the year, with the approval of the Department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the Department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Entomology	(107 and 108)	3
Rural Economics	(103 and 104)	4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the Junior year a choice of either Entomology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	4	Botany	(102)	4
Physical Training		1	Physical Training		1

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	5
Physiology	(101)	3	Physiology	(102)	3
French or German		4	French or German		4
Art	(119)	1	Home Economics	(112)	2
Home Economics	(111)	2	Textiles		
Textiles			Engineering Drawing	(128)	1½
Engineering Drawing	(127)	1½	Physical Training		1
Physical Training		1			

THIRD YEAR

Economics	(135)	3	Economics	(136)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	3	Home Economics	(104)	3
English	(131)	3	Sanitation		
Art	(131)	2	English	(133)	3
			Art	(141)	2

FOURTH YEAR

First Semester			Second Semester		
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Psychology	(101)	3	Dietetics		
Sociology	(101)	3	Psychology	(102)	3
Home Economics	(118)	3	Sociology	(102)	3
House Decoration			Home Economics	(119)	3
Elective		3	House Decoration		
			Elective		3

FIFTH YEAR

Home Economics	(105)	3	Home Economics	(106)	3
Seminar			Seminar		
History of Education	(101)	3	History of Education	(102)	3
Elective		9	Elective		9

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3), 108 (2), 109 (2).
 Sociology 107 (3), 120 (3).
 Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).
 Chemistry 151-152, 153-154.
 Philosophy 115 (2)—116 (2).
 Greek 115 (2)—116 (2).
 Physiology 104 (3).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

First Term		Second Term	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Agricultural Engineering	(51) 4	Dairying	(52) 3
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Horticulture	(53) 4	Horticulture	(54) 4
Soils	(53) 3	Soils	(54) 3
Dairying	(53) 3	Agricultural Engineering	(52) 4
Rural Economics	(51) 4	Animal Husbandry	(54) 4
Farm Crops	(51) 4	Farm Crops	(52) 4
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59)	3	Animal Husbandry	(60)	3
Veterinary Medicine	(51)	3	Veterinary Medicine	(52)	3
Horticulture	(55)	4	Horticulture	(56)	4
Bacteriology	(51)	4	Entomology	(52)	4
Agricultural Engineering	(53)	3	Dairying	(56)	3
Animal Husbandry	(53)	4	Horticulture	(58)	4
Horticulture	(57)	4	Horticulture	(60)	4
Botany	(91)	4	Rural Economics	(54)	4
Rural Economics	(53)	4	Dairying	(58)	3
Dairying	(57)	3			
Forestry	(51)	4			
Entomology	(51)	4			
Dairying	(55)	3			

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

First Term		Second Term	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Forestry	(51) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(55) 4	Horticulture	(64) 4
Dairying	(55) 3	Horticulture	(62) 4

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

DAIRYING

The course in Dairying is divided into two four-week courses. The first one, "Farm Dairying and Advanced Registry course," beginning January 2, 1917, and ending January 27, 1917, will be given to meet the demand of those who wish to receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufactures," begins January 29, 1917, and ends February 24, 1917. This course has been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter,

cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this Department and is given at a time of the year when the buttermakers, cheese-makers, ice cream-makers and milk men can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

Those who are interested are requested to write to the Secretary of the Entrance Board for the special announcements describing these courses.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN AND LYMAN, ASSISTANT PROFESSOR PHILLIPS,
MR. SALTER, MR. HUTCHISON, MR. McCLURE, MR. SLEETH
AND DEPARTMENT ASSISTANTS

AGRICULTURAL CHEMISTRY

103. General Agricultural Chemistry. Five credit hours. First semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Vivian, Mr. Phillips.

An introductory course on the chemistry of plants and animals.

105-106. Advanced Agricultural Analysis. Five credit hours. The year. Prerequisite, Agricultural Chemistry 103-104. Mr. Phillips.

The work of this course consists of a detailed study of the official methods of determining nitrogen, potash, phosphoric acid; the complete analysis of grains and feeding stuffs, milk, butter, and cheese. Intended for students desiring to specialize in agricultural chemistry.

113. Chemistry of Insecticides and Fungicides. Two credit hours. First semester. One lecture and one laboratory period each week. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

123-124. Household Chemistry. Four credit hours. The year. (123) Home Economics, second year, second semester; (124) third year, first semester. Prerequisite, Chemistry 106 or 110. Mr. Lyman, Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

107-108. Dairy Chemistry. Three to five credit hours. The

year. Prerequisite, Agricultural Chemistry 103-104. Mr. Hutchison.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

***111-112. Chemistry of Animal Nutrition.** Three to five credit hours. The year. Prerequisites, Agricultural Chemistry 103-104 or equivalent. Mr. Lyman.

For students specializing in animal husbandry.

***121-122. Food Inspection and Analysis.** Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103-104 or an equivalent preparation in quantitative analysis. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

***125-126. Chemistry of Food and Nutrition.** Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

For graduate courses in this department see the Bulletin of the Graduate School.

*Not given in 1916-1917.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year. Mr. Salter.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Five credit hours. Second semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Vivian.

An introductory course on the origin and the chemical and physical properties of soils, their management and fertilization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

153-154. Soil Fertility. Two credit hours. The year. Prerequisite, Soils 152.

Lectures and reference on the theories of soil fertility, experimental results and their practical application.

155-156. Chemical Analysis of Soils. Three credit hours. The year. One lecture and two laboratory periods each week. Prerequisite, Soils 152.

A study of the methods used in the quantitative chemical analysis of soils.

157-158. Soil Physics and Soil Survey. Three credit hours. The year. Prerequisite, Soils 152.

A study of the physical properties of soil, of soil types, and of methods of soil surveying.

FOR SHORT COURSES ONLY

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL EDUCATION

See School Administration

AGRICULTURAL ENGINEERING

Office, 201 Horticulture and Forestry Building

PROFESSOR RAMSOWER, ASSISTANT PROFESSOR IVES,
MR. McCUEN

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125. Mr. Ramsower.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

Formerly Agronomy 101.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

Formerly Agronomy 121.

106. Drainage. Three credit hours. Second semester. Mr. Ramsower, Mr. Ives.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth, and distance apart; (c) roads; history of road building, kinds of roads, their construction and cost. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit. Formerly Agronomy 102.

110. Advanced Farm Machinery. Two credit hours. Second semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field machinery including grain-binders, corn-harvesters, mowers, hay-loaders, spreaders, etc. Practice in assembling and disassembling the machines studied, together with problems covering various features of design and operation.

107. Farm Power. Three credit hours. First semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, steam engines, wind-mills and electric power.

108. Concrete Construction. Three credit hours. Second semester. Mr. Ives.

Lectures and laboratory covering the making of forms, simple tests of concreting materials, proportioning materials for different purposes, mixing and placing, laying walks and floors, reinforcement, etc. Written reports will be required for each day's laboratory work.

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the department. Mr. Ramsower, Mr. Ives, Mr. McCuen.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricultural engineering. Work may be chosen pertaining to farm structures, drainage, farm power, concrete construction, or field machinery.

114. Design of Dairy Buildings. Two credit hours. Second semester. This course is designed for students specializing in Dairying, and must be preceded by Dairying 115 and Drawing 125. Mr. Ives.

A few lectures will be given relative to strength of materials and problems in design, but the greater part of the time will be devoted to the planning of ice-houses, milk-houses, dairy barns, cheese factories, condensories, manure pits, water supply and sewage disposal plants as related to the dairy business, following the specifications given in Dairying 115.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering (a) laying out the farm

and locating the buildings; (b) construction of farm buildings, building materials, ventilation, painting, etc.; (c) designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; (d) concrete and its uses.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. McCuen.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, and steam engines, windmills, water supply and lighting systems.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT AND HOCKETT, ASSISTANT PROFESSOR SCHLESINGER, MR. WOOD

101-102. History of the United States (1763-1912). Three credit hours. The year. Mr. Hockett, Mr. Schlesinger, Mr. Wood.

American History 101 is given also during the second semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1912. Text-book, discussion, and collateral readings.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to

eight laboratory hours each week. Prerequisite, Zoology 101-102 or Physiology 101-102 or an equivalent. Mr. Landacre, Mr. Hoskins.

Fishes, amphibians and reptiles. Formerly Zoology 103.

102. Comparative Anatomy of the Vertebrates. Three to five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Required of students in the Arts-Medicine and Science-Medicine courses. Prerequisite, Anatomy 101, Physiology 101 or Zoology 101 or an equivalent. Mr. Landacre, Mr. Hoskins.

Birds and mammals. Formerly Zoology 104.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, Anatomy 101-102 or an equivalent. Mr. Landacre.

Karyokinesis and the early development of fishes, amphibians and reptiles. Formerly Zoology 125.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, Anatomy 101-102 or an equivalent. Mr. Landacre.

The development of birds and mammals. Formerly Zoology 126.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, Zoology 101-102 or Physiology 101-102, or an equivalent. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study. Formerly Zoology 119.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, Zoology 101-102 or Physiology 101-102, or an equivalent. Mr. Landacre.

The histology and early development of the frog.

Formerly Zoology 120.

For graduate courses in this department see the Bulletin of the Graduate School.

ANIMAL HUSBANDRY

Judging Pavilion

PROFESSORS PLUMB AND KAYS, ASSISTANT PROFESSORS JACOBY, COFFEY, AND SALISBURY, MR. STONE AND DEPARTMENT ASSISTANTS

101. Types and Classes of Cattle and Sheep. Four credit hours. First semester. Mr. Salisbury, Mr. Stone.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Mr. Salisbury, Mr. Stone.

A discussion of the various types, classes, and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Mr. Kays, Mr. Stone.

Lectures, text-books, and recitations upon the history, development, characteristics, and adaptation of types and breeds of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Mr. Kays, Mr. Coffey.

This course covers the subject of cattle and swine on the same basis as Animal Husbandry 103.

105. Feeding Animals. Three credit hours. First semester. Mr. Lyman, Mr. Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs, and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations, in studying rations in practical use in the community, and suggesting improvements, if desirable.

106. Principles of Breeding. Four credit hours. Second semester. Mr. Kays.

Lectures, text-books, and recitations upon the subject of heredity from various points of view in its application to breed-

ing farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction and working out problems in heredity from herd books. Students taking this course should have had either Animal Husbandry 103 or 104, and Zoology 101-102.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Prerequisites, Animal Husbandry 101-102, 103-104. Mr. Kays.

For advanced students only. A detailed consideration is given to type and breed characteristics, and the relationship of form to function. Students electing this course will be required to take trips with the instructor, to a limited number of stock farms where practice in judging may be obtained.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period each week. This course should be preceded by Animal Husbandry 105 and 106. Mr. Coffey.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool, and pork.

109. Horse Training, Harness and Vehicles. Two credit hours. First semester. Mr. Kays.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle, and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. One credit hour. Second semester. Mr. Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. First semester. Mr. Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practice of the live stock markets and yards, the market classification and grading, the

export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market developments. Visits are also made to stock yards, transportation agencies, packing houses, etc.

116. Dairy Cattle. Four credit hours. Second semester. Prerequisite, Animal Husbandry 101-102. Mr. Salisbury.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases, and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Animal Husbandry, 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern States, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to visit the poultry plant morning, noon, and afternoon to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon, and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Mr. Plumb.

Lectures and seminar on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practice in shearing is required.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Salisbury.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Second term. Second year. Mr. Plumb.

A study of the principles of nutrition, character, and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in Types and Breeds of Farm Animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: Breeds and breeding, feeding, housing, marketing, natural and artificial incubation, and brooding and poultry diseases.

ARCHITECTURE

Office, 100 Brown Hall

PROFESSORS BRADFORD AND CHUBB, MR. HASKETT, MR. RONAN

131. Elements of Architecture. Two credit hours. First semester. Prerequisite, Art 131 and Engineering Drawing 125.

132. Elements of Architecture. Two credit hours. Second semester. Prerequisite, Architecture 131.

133. History of Architecture. Three credit hours. First semester. Prerequisite, Architecture 132.

136. History of Architecture. Three credit hours. Second semester. Prerequisite, Architecture 133.

History of Modern Architecture.

111. Photography. Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. Principles of Architectural Composition. Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 203 Hayes Hall

PROFESSOR KELLEY, MISS ROBINSON, MISS SHEPHERD, MR.
NORRIS, MR. CHRISTENSEN

131-132. Elementary Drawing. Two credit hours. The year. Two two-hour periods each week.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

133. Advanced Drawing. Two credit hours. Either semester. Prerequisite, Art 131-132. Two two-hour periods each week.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

136. Water Color Painting. Two credit hours. Either semester. Prerequisites, Art 133 and 141. Two two-hour periods each week.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. One lecture each week.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131, 141. Miss Shepherd.

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSOR MORREY, ASSISTANT PROFESSOR STARIN, MR. FRONING, MISS MCCOY, AND DEPARTMENT ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mr. Froning, Miss McCoy, and laboratory assistants.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mr. Froning, Miss McCoy.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110, or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112, or equivalents. Mr. Morrey.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLICAL LITERATURE, HISTORY AND EXEGESIS

Office, 103 Orton Hall

PROFESSOR BREYFOGLE

***101. Biblical Literature.** Three credit hours. First semester. Lectures, quiz, and reports. Miss Breyfogle.

A consideration of the literature, history, and religion of the Old Testament.

This is a general course touching upon the historical crises of the Old Testament with an attempt to recreate the political, economic, and social conditions as a basis for the better understanding of the moral and religious teachings. A stereopticon will be used, showing the latest discoveries in Palestine, Egypt, and Assyria.

***102. Historical Christianity in Outline.** Three credit hours. Second semester. Miss Breyfogle.

A consideration of Judaism, of the life, work, and teachings of the Founder of Christianity, and of Apostolic teaching.

This course is intended to give the student a systematic knowledge of the New Testament in its historical setting. It will consider the relation of Christianity to Hellenic Judaism, the teachings of Jesus as shown by a comparison of the gospels, and the expansion of Christianity throughout the world during the Apostolic times. Stereopticon views will be freely used and an endeavor made to familiarize the student with the text.

103-104. The History of Religion in Outline. Three credit hours. The year. Lectures, quiz, and reports. Miss Breyfogle.

A consideration of the great book religions of the world.

BIBLIOGRAPHY

Office, the Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogues, and the publications of

*Not given in 1916-1917.

the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS SCHAFFNER AND TRANSEAU, ASSISTANT PROFESSORS GRIGGS, DETMERS, AND STOVER, MR. SEARS AND DEPARTMENT ASSISTANTS

101-102. General Botany. Four credit hours. The year. Mr. Schaffner, Mr. Griggs, Miss Detmers, Mr. Stover, Mr. Sears. Text-books, Curtis's *Nature and Development of Plants* (4th edition), Schaffner's *Laboratory Outlines for General Botany* (4th edition).

A general survey of the plant kingdom by the comparative method of morphological types and life cycles. A general view of the morphology, evolution, and classification of plants from the lowest to the highest.

107. Plant Histology. Two credit hours. First semester. Prerequisite, Botany 101-102, or equivalent. Miss Detmers.

The physical structure and properties of protoplasm are studied, then, in order, the cell, the tissues, tissue systems and finally the histological structure of the plant organs are taken up. The course is designed primarily for students of plant physiology.

110. General Dendrology. Two credit hours. First semester. Mr. Sears.

Text-book, Schaffner's *Field Manual of Trees*.

A study of trees and shrubs, with practice in the identification of woody plants, in both summer and winter condition. Students are required to prepare a dendrological herbarium.

***112. Elementary Botany.** Four credit hours. Second semester. Miss Detmers.

Text-books, Bergen and Caldwell's *Practical Botany* and Kellerman's *Spring Flora* (new edition).

This is a general elementary course, consisting mostly of organography, plant physiology, and a study of the native flora, but some instruction is also given in ecology and classification and the economic phases of the subject. The students are required to do work in the field both in observation and collecting.

This course cannot be used for University credit.

*Not given in 1916-1917.

113. Morphology of the Higher Fungi. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, Botany 101-102. Mr. Stover.

A study of the fungous flora, both fleshy and woody forms, with especial reference to edible and poisonous mushrooms and to the wood-destroying species.

116. Plant Pathology. Three credit hours. Second semester. Lecture and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Stover.

Text-book, Duggar's Fungous Diseases of Plants.

Representative bacterial and fungous diseases of horticultural and agricultural crops are studied in the laboratory. In the lectures, consideration is given to the natural symptoms and control of plant diseases and to the classification, life history, and dissemination of pathogenic organisms.

117-118. Field Ecology. Three credit hours. The year. Lecture and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Transeau.

The ecological relation of the forests of North America. Field work on the local vegetation.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102, or equivalent. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors.

120. Field Botany. Three credit hours. Second semester. Prerequisite, Botany 101. Mr. Griggs.

Excursions are made to the most interesting localities within reach of Columbus on Saturday. On Monday afternoon, material collected in the field is determined.

145-146. Structure and Identification of Wood. Two credit hours. The year. Prerequisite, Botany 101-102. Mr. Brown.

This course includes a study of the gross and microscopic structure of wood, identification of commercial woods, and the preparation of a collection of microscopic slides.

FOR ADVANCED UNDERGRADUATES AND GRADUATES --

121. Plant Genetics. Three credit hours. First semester. Lecture and laboratory. Prerequisite, Botany 101-102 and one

additional year of some biological subject. Mr. Schaffner, Mr. Brown.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, fluctuations, and mutations, together with methods of procedure in crossing both lower and higher plants. Emphasis is placed on heredity in wheat and corn. Students electing this course should also take Zoology 129.

127-128. General Plant Pathology. Four credit hours. The year. Laboratory and field work. Prerequisite, Botany 101-102, or equivalent. Mr. Griggs.

Text-book: Stevens' Fungi and Stevens and Hall's Diseases of Economic Plants.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisite, Botany 101-102 or equivalent. Mr. Schaffner, Mr. Transeau, Mr. Griggs, Mr. Stover.

139-140. Methods in Plant Pathology. Three to five credit hours. The year. Prerequisite, Botany 127-128 or equivalent. Mr. Stover.

142. Dendrology of Conifers. Two credit hours. Second semester. Prerequisite, Botany 101-102. Mr. Schaffner.

A general study of conifers including identification, classification and distribution of North American species.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Text-book: Stevens and Hall's Diseases of Economic Plants. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON, EVANS, ASSISTANT PROFESSOR BOORD.
MR. HUMMELL, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, and department assistants.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Hummell, and department assistants.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, and department assistants.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105, and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Hummell, and department assistants.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures and one quiz each week. Prerequisite, an acceptable course in general chemistry. Mr. McPherson.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours each week. Laboratory

open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord.

The preparation of typical organic compounds.

For graduate courses in this department see the Bulletin of the Graduate School.

CIVIL ENGINEERING

Office, 107 Brown Hall

PROFESSOR ENO, MR. NEILSON, MR. CARROLL

121. Surveying and Topographic Drawing. Six credit hours. First semester. Prerequisite, Mathematics 114 or 132, and Engineering Drawing 101. Mr. Neilson.

The work will be divided into lectures, recitations, field work, computing, and drawing in such manner as the schedule and weather will permit.

131. Surveying. Five credit hours. First semester. Forestry and Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Neilson, Mr. Carroll.

132. Forestry Surveying. Five credit hours. Second semester. Forestry, second year. Prerequisite, Civil Engineering 131. Mr. Neilson, Mr. Carroll.

133. Sanitation, Drainage, Water Supply. One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSORS CUNNINGHAM, CLEVENGER, AND STOLTZ

101. Principles of Dairying. Four credit hours. Either semester. Prerequisite to all other courses in dairying. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the relation of dairying to gen-

eral agriculture; the composition of dairy products and the laws governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. Farm Dairying. Four credit hours. Second semester. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Either semester. Prerequisite, Bacteriology 107. Mr. Cunningham.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Two or four credit hours. Either semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento, and camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice-Cream Making. Two credit hours. Second semester. Mr. Cunningham.

Lectures will be given on the theory and practice of ice-cream making. Laboratory work will consist of making ice-cream and other frozen products.

111. Dairy Mechanics. Two credit hours. Either semester. Mr. Clevenger.

This course consists of one lecture hour and one three-hour laboratory period. The construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, pulleys, pipe fitting, and soldering, and the operation of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Two credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, Economic Dairying. This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used. Second, Investigational Work. This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

115. Dairy Buildings. Two credit hours. First semester. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories and refrigerating plants. Must be followed by Agricultural Engineering 114.

116. Milk Condensing. Two credit hours. Second semester. Mr. Erf.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

119-120. Seminar. One credit hour. The year.

Seminar on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Dairy Production. Three credit hours. Either term. First year. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the composition of milk, and the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering of cows in the Advanced Registry. In the laboratory practical work will be given in testing milk and cream for butter-fat and testing dairy herds for butter-fat production.

53. Farm Dairy Manufactures. Three credit hours. Either term. Second year. Mr. Erf, Mr. Cunningham, Mr. Stoltz, Mr. Clevenger.

Lectures will be given on laws and regulations relating to dairy products, the handling of milk on the farm, and the manufacture of dairy products on the farm. Laboratory work will be given in testing cream, butter, and cheese, the handling and manufacture of butter and cheese, and the designing of dairy barns and milk houses.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage, and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Buttermaking. Three credit hours. Second term. Mr. Clevenger.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, **Economical Dairying**. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, **Investigational Work**. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

See Engineering Drawing

ECONOMICS AND SOCIOLOGY

Office, 102 Page Hall

PROFESSORS HAGERTY, HAMMOND, LOCKHART, HUNTINGTON, AND RUGGLES, ASSISTANT PROFESSORS WALRADT, PARRY AND BURGESS, MR. DRURY, MR. BRUDER, MR. HARRIS, MR. WEIDLER, MR. WILKINSON, MISS LOUISE MARK AND DEPARTMENT ASSISTANTS

ECONOMICS

135-136. Principles of Economics. Three credit hours. The year. Not open to first-year students. Should precede all courses in Economics except 131, 133. Concurrent 139. Mr. Hammond, Mr. Lockhart, Mr. Ruggles, Mr. Parry, Mr. Drury, Mr. Weidler, Mr. Wilkinson.

A careful study of the laws of production, exchange, distribution, and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures, and individual investigation.

Economics 136 is given also during the first semester. Mr. Walradt.

Economics 135 is given also during the second semester. Mr. Walradt.

139. Elements of Accounting. Three credit hours. First semester. Prerequisite, registration in Economics 135-136. Mr. Harris and assistant.

This course should be followed by Economics 171.

In this course the student is made familiar with the essentials of accounting as exemplified in the main types of book-keeping. The main object is to give the student such a grasp of fundamental principles as will enable him to understand the significance of accounts, which with the increasing emphasis on the business side of farming becomes important to the agriculturist as well as to other business men.

171. Principles of Accounting. Three credit hours. Second semester. Prerequisite, Economics 139. Mr. Huntington, Mr. Harris.

The principles of modern accounting, including a study of some of its problems, especially those connected with the balance sheet and the income statement, as the valuation of assets, and the treatment of good will, depreciation, capital stock, profits, surplus, reserves, etc.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 135-136. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans, and financial administration, currency legislation, and the development of banking institutions.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Mr. Burgess, Mr. Bruder, Miss Mark, and Mr. McKenzie.

Not open to first-year students.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading, and individual investigations. Sociology 101 is given also during the second semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Mr. McKenzie.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions, and its problems.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102.

The family as an economic institution. The evolution of

household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

For graduate courses in this department see the Bulletin of the Graduate School.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN, WILLIAMS, SHEETS, AND TURNBULL, MR. GILBERT, MR. SVENSEN, MR. INAGAKY

101. Elementary Mechanical Drawing. Two credit hours. Either semester.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Drawing 123. Lettering, orthographic, isometric, and oblique projections. Mr. French and department instructors.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Drawing 125. Mr. Meiklejohn.

***123. Engineering Drawing.** Two credit hours. First semester.

125. Mechanical Drawing. Two credit hours. Either semester. Agriculture and Horticulture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Drawing 127.

Drawing 127 and 128 are required in Home Economics, third year.

***137-138. Engineering Drawing.** Two credit hours. The year. Prerequisite, Drawing 123 or 101.

A course especially for forestry students. Practice in topographic drawing, lettering, tracing, and blue-printing, and the design of simple engineering structures, such as culverts, trestles, small wooden bridges, and dams.

•Not given in 1916-1917.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, AND GRAVES, ASSISTANT PROFESSORS COOPER, BECK, KETCHAM, ANDREWS, AND PERCIVAL, MR. CRAIG, MR. DISHONG, MR. WILEY AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101-104. Mr. Beck.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101-104. Mr. Beck.

121. Public Speaking. Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

122. Debating. Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

131. Introduction to English Literature. Three credit hours. Either semester. No prerequisite course. Mr. Cooper, Mr. Beck, Mr. Andrews, Mr. Percival.

The outline of the history will be given by lecture. The following will be read: a ballad book, three plays of Shakespeare, Selections from Palgrave's Golden Treasury, Addison's Essays, Carlyle's Hero as Poet, one of Scott's novels.

European History 103-104 (Narrative History) is recommended in connection with this course.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor,

Mr. Graves, Mr. Andrews. Second semester; Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant, and Poe; of Hawthorne, Emerson, Whittier, Longfellow, and Lowell; and of Walt Whitman; with a brief survey of recent literature.

FOR SHORT COURSES ONLY

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition, and argumentation.

ENTOMOLOGY

See Zoology and Entomology

EUROPEAN HISTORY

Office, 204 University Hall

PROFESSORS SIEBERT, McNEAL, AND PERKINS, MR. HARRIS

101. Medieval History. Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

102. Modern History from 1500 A. D. Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

FARM CROPS

Office, 108 Townshend Hall

MR. STEMPLE AND ASSISTANTS

101. Field Crop Production. Four credit hours. Either semester. Prerequisite, Botany 101, or its equivalent. Mr. Stemple.

A study of the history, adaptation, distribution, and classification of the cereal crops, and the cultivation, harvesting, and marketing of the same throughout the great agricultural sections of the world, with especial attention given to Ohio conditions.

109. Cereal Crop Production. Two or three credit hours. First semester. Prerequisite, Farm Crops 101. Mr. Stemple.

Discussion of subjects relating to cereal crop production. Laboratory in judging and grading of cereals. Classification of varieties, manufactured products and cultural experiments.

111. Forage Crop Production. Two or three credit hours. Second semester. Prerequisite, Farm Crops 101. Mr. Stemple.

A continuation of Farm Crops 109 in which forage crops are discussed with laboratory practice in classification of varieties and seed standardization.

113. Field Crop Improvement. Three credit hours. Second semester. Prerequisite, Farm Crops 101.

A study of the principles involved and the methods used in the improvement of field crops.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

115-116. Advanced Crop Production. Five to ten credit hours. The year. Prerequisite, a collegiate course in elementary crop production. Mr. ———, Mr. Stemple.

Research and monograph work in one or more of the cereal or forage crops.

117-118. Advanced Crop Improvement. Five to ten credit hours. The year. Prerequisite, a collegiate course in botany and at least one semester of plant breeding or farm crop improvement work. Mr. ———.

Research work in plant breeding, the study of plant breeding experiments at the University and at the State Experiment Station, and the investigation of crop improvement work in other states and countries.

121-122. Seminar. One credit hour. The year. Mr. ———, Mr. Stemple.

FOR SHORT COURSES ONLY

51-52. Crop Production. Four credit hours. The year. Mr. ———, Mr. Stemple.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

The work is planned with special reference to Ohio conditions.

For graduate work in this department see the *Bulletin of the Graduate School*.

FORESTRY

Office, 101 Horticulture and Forestry Building

PROFESSOR LAZENBY, ASSISTANT PROFESSOR SCHERER, MR.

PFLUEGER, AND DEPARTMENT ASSISTANTS

101. Introduction to Forestry. Two credit hours. First semester. Lectures and field work. Mr. Lazenby.

A general presentation of what trees are, how they live and grow, and what they do. A specific study of the trees and shrubs on the campus, in the city parks, the University woodlots and nearby woodlands.

102. Silvics. Two credit hours. Second semester. Lectures and field work. Mr. Lazenby.

A continuation of the study of trees and shrubs from the forester's standpoint and the characteristics, not only of species, but of stands, societies and associations of forest trees.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Two lectures or recitations and one two-hour period of field work each week. Mr. DuBois.

The cultivation and management of trees for various specific purposes, such as wind-breaks, hedges, shade and ornament, small plantations for post and pole timber, for maple syrup, for nuts. The care of farm wood-lots; treatment of diseased and injured trees. City forestry.

Note: The above three courses while designed for Forestry students are open and adapted to students of other departments.

105-106. Silviculture. Three credit hours. The year. Two lectures and one three-hour period of field work each week. Prerequisites, Botany 101-102, Forestry 101-102. Mr. Scherer.

A review of soil, climate, exposure and other ecological factors influencing forest growth; description of typical woodlands in forests; collecting and testing forest-tree seeds. Care of woodlands and forests including natural regeneration, pruning and thinning.

107. Forest Mensuration. Four credit hours. First semester. Prerequisite, Forestry 101-102. Mr. Pflueger, Mr. DuBois.

Methods of measuring the volume of felled and standing trees. The preparation of volume tables, form-factor tables and taper tables. Timber estimating by the various methods used in practice. Study of age, rate of growth and future yield of trees and forest. Stump and complete stem analyses.

111. Forest Protection. Two credit hours. First semester. Lectures and recitations. Mr. Scherer.

Protection of forests from fire and other inanimate enemies, from insects, fungi and other animate enemies.

112. Forest Craft. Two credit hours. Second semester. Lectures and demonstrations. Mr. Pflueger.

Camping, types of tents and other shelter. Camp cookery, packing, ranger cabins, trails, forest telephone and telegraph lines, bridges, first aid to the sick and injured.

113. Forest Economics. Two credit hours. First semester. Lectures and recitations. Prerequisite, Forestry 105-106. Mr. Lazenby.

The economic value and benefits of forestry. National and State forest areas; National and State private forests; forestry of foreign countries; importance of the lumber industry and woodworking industries.

114. Forest Policy. Two credit hours. Second semester. Prerequisite, Forestry 113. Mr. Lazenby.

Functions of the federal government, the states, counties, municipalities and communities relative to forestry. Forest laws; civil service regulations; forest education and training; relation of public welfare to forestry.

115. Grazing and Range Investigations. Two credit hours. First semester. One lecture and field laboratory work each week. Prerequisites, Botany 102 and Forestry 102. Mr. Scherer.

Historical development; the function and object of grazing; rules and regulations, past and present; the principles governing the same; methods of running stock, both sheep and cattle, and the effect on the range and forest; brands and branding. A study of the most important range plants.

116. Forest Products. Four credit hours. Second semester.

ter. Lectures and laboratory work. Prerequisite, Forestry 105. Mr. Scherer.

The physical properties of wood, the various methods of wood preservation, woodworking plants and industries, various uses of forest by-products.

117-118. Seminar. One credit hour. The year. Mr. Lazenby, Mr. Scherer, Mr. Pflueger, Mr. DuBois.

119-120. Advanced Forestry. Three to five credit hours. The year. Open as a fourth-year elective in Forestry. Mr. Lazenby, Mr. Scherer, Mr. Pflueger.

Investigation and research. Subjects to be assigned.

121. Lumbering. Three credit hours. First semester. Two lectures and one three-hour period each week. Prerequisite, Forestry 107. Mr. Pflueger.

The methods of logging used in the principal lumber regions of the United States. Detailed study of the methods of transportation including logging, railways, pole roads, inclines, timber chutes, tramways, dams, river driving, rafting, fluming, steam logging, and determination of stumpage values.

122. Forest Utilization. Three credit hours. Second semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 121. Mr. Pflueger.

Detailed study of the various types of saw mills. Methods of milling and the management of lumber manufacturing plants. Log scaling and mill-scale studies. Seasoning and grading of lumber. Utilization of waste in manufacture. Determination of lumber costs and profits; logging and lumber accounts; timber bonds. (Forestry 121 and 122, formerly Forestry 108.)

123. Forest Management. Four credit hours. First semester. Three lectures and one three-hour period of field work each week. Prerequisites, Forestry 106-107, 124; Civil Engineering 127. Mr. Pflueger, Mr. DuBois.

The principles underlying the management of forests. Study of the increment of forests; determination of the rotation and the size and distribution of the age, classes in a forest. Forest surveying and mapping.

124. Forest Finance and Administration. Two credit hours. Second semester. Lectures and recitations. Prerequisite, Forestry 107. Mr. Pflueger.

Forest valuation and statistics. The laws of compound interest as applied to forestal investments. A study of the cost, sale, expectation and replacement value of forests. Future returns from forestry. Methods of administering forest properties. Organizing the National forest force with special reference to the problems arising in the practice of forestry. State and private administration. Game and bird reservations in connection with forest areas. The National park movement.

(Forestry 123 and 124, formerly Forestry 109.)

125. Silviculture. Three credit hours. First semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 106. Mr. Scherer.

A study of forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation, practice in seed beds and nurseries; sowing seeds and transplanting of forests; establishment, improvement and extension of woodlands.

126. Silvicultural Problems. Three credit hours. Second semester. Prerequisite, Forestry 125. Mr. Scherer.

Research work in the various phases of silviculture.

127. Principles of Forestry. Two credit hours. First semester. Lectures with occasional recitations and field trips. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry. The problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it—all serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary to tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Not open to Forestry students.

128. Forest Organization. Three credit hours. Second semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 123. Mr. Pflueger, Mr. DuBois.

Study of forest working-plans, determination and regulation of the yield. Forest working-plans in Europe and America.

The preparation of a working-plan for a definite forest area is required.

For graduate courses in this department see the *Bulletin of the Graduate School*.

FOR SHORT COURSES ONLY

51. Introduction to Forestry. Four credit hours. First term. Lectures, laboratory and field work. Mr. Lazenby.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow and general welfare. The economic value of a good timber supply; improvement and care of farm wood-lots; special plantations for post and pole timber; planting and management of forest trees for specific purposes such as wind-breaks, hedges, shade and ornament trees, maple syrup, nuts. A prominent feature of the course will be getting acquainted with the trees and shrubs on the campus and in the University wood-lot.

GEOLOGY

Office, 104 Orton Hall

PROFESSORS PROSSER AND BOWNOCKER, ASSISTANT PROFESSOR HILLS, MR. VERWIEBE, MISS CLARA G. MARK, MR. COTTINGHAM

103. Inorganic Geology. Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models and museum materials.

104. Historical Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103. Mr. Prosser.

A general course in paleontological and stratigraphical geology, illustrated by lantern views, maps, and specimens. The development of organisms and the classification and distribution of the geological formations, especially those of Ohio, are considered. After the first of April, some of the Friday lectures will be replaced by field trips on Saturdays.

151. General Geology. Three credit hours. Either semester. Mr. Prosser, Mr. Verwiebe, Miss Mark, Mr. Cottingham.

Structural, dynamical and historical geology. The lectures are illustrated by maps, specimens and lantern views. The com-

mon rock-forming minerals and rocks are studied in the laboratory; while, in the field, various illustrations of geological structures are pointed out and the formations identified.

Field trips will be given Friday afternoon or Saturday morning of alternating weeks when the weather permits, during the early part of the first semester and the latter part of the second semester.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere, and the ocean. Recitations, lectures, map work, and field work.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Field Geology. Three to five credit hours. First semester. Prerequisite, Geology 101 or 103 and 104 or 151. Mr. Prosser.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

Study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Hills.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings, and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Prerequisite Geology 101 or 103, and 104 or 151. Mr. Prosser, Miss Mark.

Careful training in systematic classification which may be

used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three or more credit hours. First semester. Prerequisite, Geology 103 and 104, or 151. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin; the non-metals, coal, oil, gas, clay, lime, cement, building stone, etc. In the discussion of the non-metals, emphasis will be laid on the products of Ohio.

For graduate courses in this department see the Bulletin of the Graduate School.

GERMAN

Offices, 317 and 318 University Hall

PROFESSORS EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, LEWISOHN, AND BUSEY, MR. KEIDEL, MR. KOTZ, MR. REESE, AND DEPARTMENT ASSISTANTS

101-102. Elementary German. Four credit hours. The year. All instructors.

German 102 is given also during the first semester.

German 101 is given also during the second semester.

103. Intermediate German. Four credit hours. First semester. Prerequisite, German 101-102, or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose and a classical drama supplemented by discussions of syntax; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Second semester. Prerequisite, German 103, or three

entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103, or three entrance units.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 107 Page Hall

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year.

Text: Graves' A History of Education (three volumes) and Graves' Great Educators of Three Centuries. Prerequisite, Psychology 101-102.

HOME ECONOMICS

Office, New Home Economics Building

PROFESSORS WHITE AND DENTON, ASSISTANT PROFESSORS VAN METER AND HATHAWAY, MISS TUCKER, MRS. WALKER, MISS SKINNER, MRS. ADAMS AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Prerequisite, Chemistry 106 or 110. Miss White, Miss Skinner, Miss McGuire.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost, and value of nutrients in the various food materials. Lectures and quiz are combined with laboratory work.

104. Sanitation. Three credit hours. Either semester. Prerequisite or concurrent, Bacteriology 107. Miss Denton.

Location and construction of the house from the point of view of water supply, plumbing, heating, ventilating and lighting. Interdependence of home and public agencies in securing sanitation and hygiene. Special attention is given to emergencies, first aid to the injured, and home nursing.

108. Teaching of Home Economics. Two credit hours. Second semester. Prerequisites, Home Economics 101-102, 111-112, History of Education 101, or Principles of Education 101. Miss Van Meter, Miss Hathaway, Mrs. Adams.

This course is designed for students intending to teach Home Economics. Survey of Home Economics, examination of courses of study, lesson-plans and study of various types of schools.

111-112. Textiles. Two credit hours. The year. Prerequisite or concurrent, Art 119. Mrs. Walker, Miss Tucker, Miss Brady.

The study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. Lecture and laboratory. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway, Miss Brady.

Economics, hygiene, design, and color in their relation to dress. The laboratory work includes the drafting and designing of patterns, the careful selection and combination of materials, and the making of a simple cloth dress.

116. Dress. Three credit hours. Second semester. Lecture and laboratory. Miss Hathaway, Miss Brady.

Continuation and amplification of Home Economics 113.

In the lectures an outline of the history of costume will be given, which may be taken as a one-hour lecture course without the laboratory. The laboratory work continues Home Economics 113 in the drafting and designing of patterns, and includes the making of silk and draped dresses.

118. The House. Three credit hours. Either semester.

Prerequisites, Economics 135, Art 131, 141, Home Economics 112. Home Economics 104 may be either prerequisite or concurrent. Miss Tucker.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. The House. Three credit hours. Either semester. Continuation of 118. Prerequisites, Economics 136, Art 141, Home Economics 102-118. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

121. Advanced Study of Foods. Three credit hours. First semester. Prerequisites, Chemistry 106 or 110, Home Economics 101 and 102. Miss White, Miss Van Meter.

A continuation of the study of foods involving demonstrations of underlying principles and studies of economic and commercial food problems.

123-124. Practice Teaching in Home Economics. Two credit hours. The year. Both semesters must be elected. Mrs. Adams.

Observation work, arranging courses of lessons, practice teaching.

105. Seminar. Two to five credit hours. First semester. Open only to fourth-year and graduate students. Miss Van Meter.

Readings and reports on Home Economics topics. Problems assigned for individual research.

106. Seminar. Two to five credit hours. Second semester. Continuation of 105. Prerequisites, Home Economics 105, and the consent of the instructor. Miss Van Meter.

Special research continued. Reports and conferences.

110. Dietetics. Four credit hours. Either semester. Prerequisites, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Denton, Miss Skinner.

A study of the chemical, physiological, and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Laboratory work includes translation of standard dietaries into food

materials and some exercise in making dietary studies. Practice is given also in preparation of food for the sick.

For graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE

Office, 118 Horticulture and Forestry Building

PROFESSORS PADDOCK, DAVIS, AND MONTGOMERY, ASSISTANT PROFESSOR ELWOOD, PROFESSOR TAYLOR (NON-RESIDENT),
AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Lectures and two laboratory hours each week. No prerequisite. Mr. Davis.

A study of plant growth with special reference to orchard, garden, greenhouse, and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Lectures and two laboratory hours each week. Prerequisite, Horticulture 101. Mr. Davis.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing, and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 101-102. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography; site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106, or equivalent. Mr. Paddock.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticised and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Agriculture, third year. Open only to third and fourth year students in Agriculture and Forestry. Mr. Davis, Mr. Montgomery.

Vegetable gardening, fruit growing, and ornamental planting adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 105, 106. Mr. Davis.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading, and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Prerequisite, Horticulture 101 and 102. Mr. Montgomery.

A study of the history and development of vegetable gardening, the area and extent of the industry, and the several general factors concerned in the production and utilization of vegetables.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. By-Products. Three credit hours. First semester. Prerequisite, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods of the preservation of surplus garden and orchard products. The theory and art of canning, pickling and preserving, the making of kraut, cider, and vinegar is considered from a commercial standpoint.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective.

172. Landscape Seminar. One credit hour. Second semester. Open to fourth-year and graduate students.

Discussion of reports from practical landscape problems.

FLORICULTURE

141-142. Commercial Floriculture. Four credit hours. The year. Prerequisites, Horticulture 101, 132.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. Floral Designs. Three credit hours. First semester. Prerequisite, Horticulture 141-142.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations, house decorations, etc.

144. Decorative and Bedding Plants. Three credit hours. Second semester. Prerequisites, Horticulture 141-142.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding.

145. Garden Flowers. Three credit hours. First semester. Prerequisite, Horticulture 141-142.

The propagation and growth of garden annual and perennial flowers as adapted to the florist's trade.

146. School Gardens. Four credit hours. Second semester. Prerequisite, Horticulture 101.

A course designed to promote the efficiency of school and vacant-lot gardens. Involving a study of plans, materials and culture of flowers and vegetables suitable for school-garden work.

147-148. Systematic Floriculture. Three credit hours. The year.

A study of the origin, history and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

151-152. Plant Materials. Two credit hours. The year. Prerequisite, Botany 101-102. One lecture and two laboratory hours each week.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Landscape Architecture, second year.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Horticulture 154 and 156.

This course takes up the general study of practical problems in design, a study of the important works of landscape architecture and the making of finished plans, reports and working drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Four credit hours. The year. Prerequisite, Horticulture 157-158.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week. Landscape Architecture, third year. Prerequisite, Civil Engineering 127.

A study of the methods adopted in compiling surveys, especially for landscape use, field practice with instruments.

165. Civic Design. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public squares, street intersections, parks and playgrounds.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers in detail a study of various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. Mr. Davis.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year. Mr. Davis.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisites, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students. Mr. Montgomery.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines, and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease, and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Montgomery.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Montgomery.

A continuation of Horticulture 65.

INDUSTRIAL ARTS

See Shopwork

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND SWARTZEL, ASSOCIATE PROFESSOR
ARNOLD, ASSISTANT PROFESSOR WEST

107. Mathematics for Students in Agriculture. Three credit hours. Either semester. Mr. Bohannan, Mr. Swartzel, Mr. Arnold, Mr. West.

The elements of trigonometry and curve-plotting, numerical computation, and algebraic manipulation.

121. College Algebra and Trigonometry. Three credit hours. Either semester. Two recitations and one two-hour problem period each week. Mr. West.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Text-book, Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

*Not given in 1916-1917.

MILITARY SCIENCE AND TACTICS

Office, The Armory

CAPTAIN CONVERSE, U. S. A. (RETIRED), LIEUT. THORPE,
U. S. A. (RETIRED)

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, both special and regular, to drill during two years unless excused by the Military and Gymnasium Board. This work is under an officer of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

1. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring) military drill, four months, three hours each week (winter) of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of the winter months, at 100, 200, and 300 yards. Lecture, one hour each week by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring), in extended order and guard duty; four months, three hours each week (winter) of class-room instruction in Articles of War, guard manual, and field service regulations; target practice at any open hour of the afternoon of the winter months, at 500, 600, and 800 yards.

PHYSICAL EDUCATION

Office, Gymnasium

PROFESSORS ST. JOHN, WILCE, AND CASTLEMAN, MR. OHLSON, MR.
MARSH, AND MR. TRAUTMAN

Physical Education for men and women is conducted under the direct supervision of the Professor of Physical Education.

MEN

101-102. Physical Education. One credit hour. The year. Two hours each week. Required of all first-year students in this college. During the first semester the course consists of one

lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene. Lectures and quizzes on the cause, prevention, and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical exercise in class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

MEDICAL EMERGENCY SECTION

Office, 103 Biological Hall

DR. WINGERT

This department maintains a medical emergency section open to all students, male and female, in the department. Emergency, medical advice and treatment is furnished free to students while on the campus, during regular University hours.

WOMEN

ASSISTANT PROFESSOR MEYER, MISS HAMMETT

131-132. Physical Education. One credit hour. Four hours each week. Required of all women students during first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

133-134. Physical Education. One credit hour. Four hours each week. Required of all women students. For second-year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE AND BLAKE, MR. HEIL

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practice. Other courses in physics may be elected by four-year students in Agriculture.

103-104. General Physics. Four credit hours. The year. Recitations, lectures, and laboratory. A non-mathematical course for students who have no entrance credit in physics.

105-106. General Physics. Four credit hours. The year. Prerequisite, entrance credit in physics. Mr. Blake.

***108. Forestry Physics.** Three credit hours. Second semester. Recitations and laboratory practice.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture.

PHYSIOLOGY

Office, 204 Biological Hall

PROFESSOR BLEILE, ASSOCIATE PROFESSOR SEYMOUR, ASSISTANT PROFESSOR DURRANT, MR. WRIGHT AND DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Wright.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including demonstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Physiology 101-102. Mr. Bleile.

A laboratory course with lectures and recitations. The course includes laboratory study of foods, digestion, secretions, excretions and blood with a short period devoted to uranalysis.

*Not given in 1916-1917.

PSYCHOLOGY

Office, 404 University Hall

PROFESSOR ARPS, ASSISTANT PROFESSORS PINTNER AND WEISS,
MR. EVANS, MR. BRIDGES, MR. CRANE, MR. DALLENBACH,
MISS GOUDGE

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. Mr. Arps, Mr. Pintner, Mr. Weiss, Mr. Evans.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

ROMANCE LANGUAGES AND LITERATURES

Office, 305 University Hall

PROFESSORS BOWEN, BRUCE, AND INGRAHAM, ASSISTANT PROFESSORS HAMILTON, CHAPIN, AND PEIRCE, MR. DITCHY,
MR. MOORE, MR. CARDON AND DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year. Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies. All instructors.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition made to contribute to this end. Sight reading is emphasized.

French 101 is given also during the second semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102, or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Peirce, Mr. Ditchy, Mr. Moore, Mr. Cardon.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. Grammar: Ingraham-Edgren's and Ingraham's *Victoria y Otros Cuentos*. Easy prose and plays. Composition and practice in speaking. Mr. Ingraham, Mr. Hamilton, Mr. Chapin, Mr. Ditchy, Mr. Moore, and department assistants.

Spanish 101 is given also during the second semester.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Spanish 101-102, or equivalent. Mr. Ingraham, Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practice in speaking continued.

RURAL ECONOMICS

Office, 101A, 102 Townshend Hall

PROFESSOR VOGT, ASSISTANT PROFESSORS PHILLIPS AND
FALCONER

101. Farm Accounting. Two credit hours. Either semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

Rural Economics 101 is given also during the second semester.

103. Farm Management. Four credit hours. Either semester. Prerequisite, Economics 135. Mr. Falconer, Mr. Phillips.

Lectures, recitations and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Prerequisite, Economics 135. Mr. Vogt.

Lectures and recitations upon the more important economic problems affecting the farmer. Relation of agriculture to other industries, land tenure, rural finance, the government in relation to the farmer.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Advanced Farm Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or its equivalent, and Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problems of farm organization and operation.

105. Historical and Comparative Agriculture. Two credit hours. First semester. Prerequisites, Rural Economics 103 and 104. Mr. Falconer.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

110. Rural Community Life. Three credit hours. Second semester. Prerequisites, Economics 135 or Sociology 101. Mr. Vogt.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

111. Advanced Farm Management. Two credit hours. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. The class-room work will deal largely with the organization of the factors of production.

113. Rural Economic Organization. Three credit hours. First semester. Prerequisite, Rural Economics 104. Mr. Vogt.

A study of the distribution of agricultural products, organized methods of marketing, and prices. The principles and methods of the various types of co-operation which are adapted to rural conditions in the United States.

***114. Land Tenure.** Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Vogt.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

For graduate courses in this department see the Bulletin of the Graduate School.

*Not given in 1916-1917.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing and operating farm lands.

53. Co-operation in Agriculture. Four credit hours. First term.

Lectures and recitations on the co-operative organizations of agriculture. Co-operative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SCHOOL ADMINISTRATION

AGRICULTURAL EDUCATION

122. The Teaching of Agriculture in the High School. Two credit hours. Second semester.

The administrative phases of secondary agriculture, the application of the principles of pedagogy to the teaching of agriculture in the high school, and the organization of agricultural materials into secondary courses of study will constitute the essential features. Intended especially for prospective supervisors and teachers of agriculture in high and normal schools. Text-book: Bricker's "The Teaching of Agriculture in the High School."

127. History of Agricultural Education. Two credit hours. First semester.

A survey of the rise and development of agricultural instruction in the United States. The land-grant colleges, the agricultural experiment stations, secondary and elementary

school instruction, farmers' institutes, agricultural societies, the club movement, etc. Ohio agricultural educational institutions.

NOTE—For additional courses in Agricultural Education consult the College of Education bulletin, Department of School Administration.

SHOPWORK

Office, New Shop Building

PROFESSOR SANBORN, MR. BEEM, MR. FOUST, MR. DENMAN, AND
DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Beem, Mr. Denman, Mr. Smith.

Practice in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practice work is directly applicable to country life.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire, and tools, practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; hardening and tempering steel, etc.

SOILS

See Agricultural Chemistry and Soils

SPANISH

See Romance Languages

SURVEY OF AGRICULTURE

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester.
The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

151. Agricultural Veterinary Medicine. Three credit hours.
First semester. Mr. White.

The more common sporadic and infectious diseases, minor surgery, castration, horseshoeing, and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours.
Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours.
First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours.
Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSOR OSBORN, ASSOCIATE PROFESSOR HINE, ASSISTANT
PROFESSORS BARROWS, KRECKER AND METCALF, MR.
KOSTIR, AND DEPARTMENT ASSISTANTS

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osborn, Mr. Barrows, Mr. Krecker, Mr. Kostir, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

129-130. Quantitative Studies in Variation and Heredity. Two to five credit hours. The year. Prerequisites, Zoology 101-102, and one year of another biological science or equivalent. Mr. Barrows.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practice in measuring, assembling, and analyzing data, and the plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practice in handling and analysis of Mendelian data.

143-144. Seminar. One credit hour. The year. Mr. Osborn.

Discussion of assigned subjects, reports on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course.

153-154. Quantitative Studies in Animal Behavior. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Barrows.

Devoted especially to insects. Required in the four-year course in Entomology. Elective to other students.

157-158. Animal Parasitology. Three to five credit hours. The year. Prerequisite, Zoology 101-102, 121-122, or equivalent. Mr. Krecker.

A consideration from the zoological standpoint of the parasitic forms in all animal phyla. In lectures and assigned read-

ings attention will be given to the conditions of parasitic life, the effects upon the host, and origin of parasitism. Laboratory studies of life histories and practice in technic.

For graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102. Mr. Osborn, Mr. Metcalf.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in entomology. Preparation of collections, essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in junior or senior year. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Osborn.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Entomology 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological investigators in experiment stations or as teachers in agricultural schools.)

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102, and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each

student of report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102, and Entomology 107-108. Mr. Osborn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of selected group or groups of insects.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite, one year of Entomology. Mr. Metcalf.

Lectures, reading, field work, and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

151-152. Entomology. Insect Control. Three credit hours. The year. Prerequisite, Zoology 101-102, and Entomology 107-108, 113-114, or equivalent. Mr. Metcalf.

Technical studies of insect control, utilization of parasitic or predaceous forms. Legislation, quarantine, inspection, insecticides, insecticide machinery, and practical work in fumigation, spraying, etc.

Entomology 151 is not prerequisite to 152.

143-144. Seminar. One credit hour. The year. Mr. Osborn.

Discussion of assigned subjects, reports on research work, current literature, etc. Advanced and graduate students in the department are expected to register in this course.

149. Medical Entomology. Three to five credit hours. First semester. Prerequisite, Zoology 101-102, and Entomology 107-108, 121-122, or equivalents. Mr. Metcalf.

Lectures, demonstrations, and recitations upon the insects concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation, and health.

For graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee. The fee for all students is fifteen dollars a semester.

The fee for the short courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars; in Botany and Zoology the fee is two dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform. The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that

second-hand uniforms were unfit to wear and certainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars and twenty-five cents to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons, by young men at reasonable rates.

Text-books. Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding

clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee	\$30 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposits to cover laboratory materials and breakage	20 00
Uniform, shirt and gloves.....	15 00
Books	15 00
Board—36 weeks at \$3.50 per week.....	126 00
Room rent, at \$8.00 per month.....	72 00
General expenses	100 00
	<hr/>
	\$384 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

Women Students. As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed four dollars a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given princi-

pally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

Home-Makers' Course. Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information describing the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus, Ohio.

TIME SCHEDULE**COLLEGE OF AGRICULTURE**

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

KEY TO ABBREVIATIONS

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Hall
- Ha.—Hayes Hall
- H. E.—Home Economics Building
- H. F.—Horticulture and Forestry Building
- L.—Library
- Lo.—Lord Hall
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- S.—Shop Building
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY AND SOILS

Agricultural Chemistry

Course No.	Hours	Time	Room	Instructor
103	5	L., M., W., at 8	T. 205	Lyman Phillips
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205	
		F., at 1	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
		Tu., Th., 1 to 4	T. 210	
105-106	5	M., at 3; Lab. to be arranged	T. 204	Phillips
107-108	3 to 5	To be arranged	T.	
113	2	F., at 3; F., 9 to 12	T. 204	
123	4	L., Tu., at 9	T. 205	
		Td., at 2	T. 205	
		Q., Th., at 9	T. 205	
		Th., at 2	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
124	4	L., Tu., at 9	T. 205	
		Tu., at 2	T. 205	
		Q., Th., at 9	T. 205	
		Th., at 2	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
131-132	5 to 10	To be arranged	T.	

For Short Courses Only

51-52	4	L., M., W., F., at 9	T. 205	
		M., W., F., at 2	T. 205	
		Lab., Tu., 8 to 10		
		Tu., 1 to 3		
		Th., 8 to 10		
		Th., 1 to 3		

Soils

151	5	L., M., W., at 8	T. 205	Vivian
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205	
		F., at 1	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
		Tu., Th., 1 to 4	T. 210	

AGRICULTURAL CHEMISTRY AND SOILS—Continued

Course No.	Hours	Time	Room	Instructor
153-154	2	Tu., Th., at 9	T. 204	
155-156	3	L., Tu., at 10	T. 205	
		Lab., M., W., 1 to 4	T.	
157-158	3	M., W., 10; Th., 1 to 4	T. 205	
201-202 3 to 10		To be arranged	T.	

For Short Courses Only

53-54	3	M., W., F., at 3	T. 205	
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AGRICULTURAL ENGINEERING

101	4	M., W., F., at 10 Lab., M., 1 to 4 Tu., 1 to 4 W., 1 to 4 F., 1 to 4	H. F. 206	Ramsower
101	4	M., W., F., at 3 Lab., Tu., 8 to 11 W., 8 to 11 Th., 8 to 11 F., 8 to 11	H. F. 204	Ramsower
103	3	Tu., Th., 1 to 4	H. F. 200	Ives
106	3	Tu., Th., 1 to 4	H. F. 204	Ramsower
107	3	Tu., at 8; Lab., F., 1 to 4 Sat., 8 to 11 Tu., Th., 1 to 4	H. F. 204	McCuen
108	3	Tu., Th., at 8; W., 1 to 4	H. F. 204	Ives
110	2	F., 1 to 4; Sat., 8 to 11	H. F. 204	McCuen
111-112 2 to 5		To be arranged		
114	2	Tu., Th., 1 to 4		Ives

For Short Courses Only

51	4	Tu., Th., at 9 Lab., F., 1 to 4 M., 1 to 4	H. F. 107	
51	4	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	H. F. 204	
52-52	4	Tu., Th., at 2 Lab., Th., F., 8 to 10 M., Tu., 8 to 10	H. F. 205	
53	3	To be arranged		
54	4	M., W., F., at 10 Tu., 1 to 4 Th., 1 to 4	T. 204	

AMERICAN HISTORY

Course No.	Hours	Time	Room	Instructor
101-102	3	M., W., F., at 8	U. 205	Schlesinger, Hockett
		M., W., F., at 8	U. 209	Wood
		M., W., F., at 9	U. 209	Wood
		M., W., F., at 9	U. 205	
		M., W., F., at 10	U. 209	
		M., W., F., at 1	U. 205	Schlesinger
		M., W., F., at 1	U. 209	Wood
		M., W., F., at 1	L. 107	
		M., W., F., at 3	U. 205	Schlesinger
		M., W., F., at 3	U. 209	
		M., W., F., at 4	U. 205	Hockett
102-101	3	M., W., F., at 10	U. 205	Wood
101	3	M., W., F., at 2	U. 209	

ANATOMY

101	3 to 5	L., W., at 1 Lab., W., Th., F., afternoons	Bio. 107	Landacre
102	3 to 5	L., Tu., at 8 Lab., Tu., Th., 8 to 11	Bio. 100	Landacre
For 5 credit hours Tu., Th., F., afternoons				
103-104	3 to 5	L., Tu., at 1 Lab., W., Th., F., afternoons	Bio. 107	Landacre
105-106	3 to 5	To be arranged	Bio.	Landacre

ANIMAL HUSBANDRY

101-102	4	M., W., F., at 9 W., 1 to 3	Pav.	Salisbury
103-104	4	M., W., F., at 10 Lab., M., 1 to 3	Pav.	Kays
105	3	M., W., F., at 9 M., W., F., at 3	Pav. Pav.	Plumb
106	4	M., W., F., at 9 Lab., W., 1 to 3 F., 1 to 3	Pav.	Kays
107	4	Th., F., 1 to 4	Pav.	
108	4	M., W., F., at 10 Lab., W., 1 to 3 F., 1 to 3	Pav.	Coffey
109	2	Tu., Th., at 9	Pav.	Kayes
110	1	Tu., at 9	Pav.	Plumb
112	3	M., W., F., at 11	Pav.	Plumb

ANIMAL HUSBANDRY—Continued

Course No.	Hours	Time	Room	Instructor
116	4	M., W., F., at 8 Lab., Th., 1 to 3	Pav.	Salisbury
117-118	3	Tu., Th., at 8 Lab., Th., 1 to 3 F., 1 to 3	Pav.	Jacoby
119	2	M., W., at 9	Pav.	Jacoby
120	1	M., at 9	Pav.	Jacoby
121	1	W., at 9	Pav.	Jacoby
122	1	To be arranged	Pav.	Jacoby
124	2	M., W., 1 to 3	Pav.	Jacoby
126	3	M., W., F., at 11	Pav.	Plumb
132	3	(Vet.)		
133	3	(Vet.)		
201-202		To be arranged		Plumb

For Short Courses Only

51-52	4	M., W., F., at 8 M., W., F., at 3 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 Th., 1 to 3	Pav. Pav.	Coffey Coffey
53	4	M., W., F., at 10 Lab., Tu., 1 to 3	Pav.	Salisbury
54	4	M., Tu., Th., F., at 10	Pav.	
56	4	M., W., F., at 8 Lab., Tu., 1 to 3 Th., 1 to 3	Pav.	Conklin
57	4	M., W., F., at 9 Lab., Tu., 1 to 3 Th., 1 to 3	Pav.	Coffey
59-60	3	Tu., Th., at 10 Lab., Tu., 1 to 3	Pav.	Jacoby

ARCHITECTURE

111	2	M., Tu., 8 to 11 W., Th., 1 to 4 F., 1 to 4; Sat., 8 to 11	Br. 1 Br. 109 Br. 1, 109	Haskett
111	2	Tu., W., 1 to 4 Th., F., 1 to 4	Br. 1 Br. 1	Haskett
113	2	Tu., Th., at 9	Br. 104	Chubb
131-132	2	M., W., 8 to 11 W., F., 1 to 4	Br. 103	
133	3	M., W., F., at 2	Br. 109	
136	3	M., W., F., at 3	Br. 104	

ART

Course No.	Hours	Time	Room	Instructor
119-119	1	F., at 8	Ha. 204	Kelley
		F., at 1	Ha. 204	Kelley
121	2	Tu., Th., 9 to 11	Ha. 303	Shepherd
121	2	Tu., Th., 1 to 3	Ha. 303	Shepherd
131	2	M., W., 8 to 10	Ha. 303	Shepherd
		M., W., 1 to 3	Ha. 303	Norris
		Tu., Th., 8 to 10	Ha. 303	Christensen
		Tu., Th., 1 to 3	Ha. 303	Robinson
131	2	Tu., Th., 8 to 10	Ha. 303	Norris
132	2	M., W., 1 to 3	Ha. 303	Shepherd
132	2	Tu., Th., 8 to 10	Ha. 303	Robinson
		M., W., 9 to 11	Ha. 303	Norris
133	2	M., W., 9 to 11	Ha. 303	Norris
		W., F., 9 to 11	Ha. 303	Robinson
133	2	Tu., Th., 2 to 4	Ha. 303	Robinson
141	2	Tu., Th., at 10	Ha. 204	Robinson
141	2	Tu., Th., at 8	Ha. 204	Shepherd
		Tu., Th., at 10	Ha. 204	Kelley
		Tu., Th., at 1	Ha. 204	Robinson
		Tu., Th., at 3	Ha. 204	Kelley
142-142	3	M., W., 8 to 10	Ha. 303	Robinson

BACTERIOLOGY

107	4 or 5	L., M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 101	Morrey
		Lab., for Home Economics only		
		Tu., Th., 8 to 11	V. L. 205	McCoy
				Froning
		Tu., Th., 1 to 4	V. L. 205	McCoy
				Froning
		Lab., M., W., 8 to 11	V. L. 201, 205	McCoy
				Froning
		M., W., 1 to 4	V. L. 201, 205	McCoy
				Froning
		M., 1 to 4; Sat., 8 to 11	V. L. 201, 205	McCoy
				Froning
108	2 to 5	L., M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 101	Morrey
		Lab., M., W., 8 to 11	V. L. 201, 205	McCoy
				Froning
		M., W., 1 to 4	V. L. 201, 205	McCoy
				Froning
		M., 1 to 4; Sat., 8 to 11	V. L. 201, 205	McCoy
				Froning

BACTERIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
110 2 to 5		L., Tu., Th., at 9 Lab., to be arranged	V. L. 102	Morrey Morrey McCoy
112 2 to 5		L., Tu., Th., at 10 Lab., to be arranged	V. L. 102	Morrey Morrey McCoy
121-122 2 to 5		To be arranged		Morrey
123-124 2 to 5		To be arranged		Morrey

For Short Courses Only

51	4	To be arranged	V. L.
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BIBLICAL LITERATURE

103-104	3	M., Tu., Th., at 10	O. 2	Breyfogle
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BIBLIOGRAPHY

101-102	1	To be arranged	Li.	Jones
103	½	Tu., at 9	Li. 107	Reeder
		Th., at 3	Li. 107	Reeder
105-106	1	W., at 4	Li. 107	Reeder

BOTANY

101-102	4	L., Tu., at 9	B. Z. 100	Schaffner
		Tu., at 2	B. Z. 100	Detmers
		Th., at 9	B. Z. 100	Stover
		Th., at 2	B. Z. 100	Griggs
		Quiz., Tu., Th., at 8	B. Z. 208	Stover
			B. Z. 110	Detmers
		Tu., Th., at 10	B. Z. 208	Stover
			B. Z. 110	Detmers
			B. Z. 100	Sears
		Tu., Th., at 1	B. Z. 208	Griggs
			B. Z. 110	Detmers
			B. Z. 100	Sears
		Tu., Th., at 3	B. Z. 208	Griggs
			B. Z. 110	Detmers
			B. Z. 100	Sears
		Lab., M., 8 to 11	B. Z. 108	Detmers
		M., 1 to 4	B. Z. 108	Stover
		Tu., 8 to 11	B. Z. 108	

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., 1 to 4	B. Z. 108	
		Th., 8 to 11	B. Z. 108	
		Th., 1 to 4	B. Z. 108	
		F., 8 to 11	B. Z. 62	Sears
			B. Z. 108	Detmers
		F., 1 to 4	B. Z. 62	Sears
			B. Z. 108	Detmers
107	2	To be arranged	B. Z. 108	Detmers
110	2	W., 1 to 4	B. Z. 108	Sears
			110	
113-116	3	L., W., at 11	B. Z. 208	Stover
		Lab., M., F., 10 to 12	B. Z. 206	
117-118	3	L., Tu., at 9	B. Z. 110	Transeau
		Lab., W., 1 to 5	B. Z. 66	
120	3	Sat. and Mon. arranged	B. Z. 210	Griggs
121	3	L., W., at 1	B. Z. 110	Schaffner
		Lab., W., 2 to 4	B. Z. 62	
123-124	3 to 5	M., W., 8 to 12	B. Z. 210	Griggs
125-126	4	L., Tu., Th., at 8	B. Z. 100	Transeau
		Lab., Tu., Th., 1 to 3	B. Z. 112	
		Tu., Th., 3 to 5	B. Z. 112	
127-128	4	Tu., Th., 8 to 11	B. Z. 210	Griggs
129-130	3 to 5	M., 1 to 4; other hours arranged	B. Z. 60	Schaffner
131-132	3 to 5	To be arranged	B. Z. 60	Schaffner
133-134	3 to 5	To be arranged		Schaffner, Transeau, Griggs, Stover
135-136	1	Tu., at 4	B. Z. 110	Schaffner
137-138	1	M., at 4	B. Z. 110	Schaffner
139-140	3 to 5	To be arranged	B. Z. 210	Griggs
142	2	Th., 1 to 4	B. Z. 62	Schaffner
145-146	2	Tu., at 8; M., 1 to 3	B. Z. 62	Brown
150	3	M., at 9; W., 9 to 11	B. Z. 110,	Transeau
			112	
201-202	3 to 10	To be arranged	B. Z. 104	Schaffner
				Griggs
203-204	4 to 10	To be arranged	B. Z. 104	Schaffner
				Griggs
205-206	4 to 10	To be arranged	B. Z. 112	Transeau
207-208	3 to 10	To be arranged	B. Z. 210	Griggs

For Short Courses Only

91	4	M., W., at 8	B. Z. 208	Stover
		Lab., Tu., Th., 1 to 3	B. Z. 203	

CHEMISTRY

Course No.	Hours	Time	Room	Instructor
105-106	4	L., M., at 8	Ch. 200	Evans and Depart- ment Assistants
		W., at 9	Ch. 200	
		M., at 1	Ch. 200	
		W., at 2	Ch. 200	
		Q., W., at 8	Ch. 302, 300	
		F., at 8	Ch. 300, 302	
		F., at 9	Ch. 207, 101, 302	
		W., at 1	Ch. 101, 302, 300	
		F., at 1	Ch. 101, 300, 302	
		F., at 2	Ch. 207, 101, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
105	4	To be arranged		Evans and Dp't As- sistants
109-110	4	L., F., at 10	Ch. 200	
		F., at 3	Ch. 200	
		Q., M., at 10	Ch. 207, 300	
		M., at 3	Ch. 207, 101, 302	
		W., at 10	Ch. 101, 207	
		W., at 3	Ch. 101, 207, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
109	4	To be arranged		
127	4	M., Tu., W., F., at 11	Ch. 200	McPherson
151-152	2	Tu., Th., at 8	Ch. 200	McPherson
153-154 2 or 3		Laboratory open in afternoons		McPherson

CIVIL ENGINEERING

Course No.	Hours	Time	Room	Instructor
121	6	To be arranged	Br.	
131-132	5	M., W., F., at 10; M., Tu., 1 to 4	Br. 1	Neilson
133	1	Tu., at 8	Br. 207	Eno

DAIRYING

101	4	M., W., F., at 10 Lab., Tu., 1 to 4 W., 1 to 4 Th., 1 to 4 F., 1 to 4	T. 200 T. 3, 5, 10	Erf
101	4	M., W., F., at 2 Lab., M., 8 to 11 Tu., 8 to 11 W., 8 to 11 F., 8 to 11	T. 200 T. 3, 5, 10	Erf
102	4	M., W., F., at 10 Lab., Tu., 1 to 4 Th., 1 to 4	T. 200 T. 3, 5, 10	Erf
103-103 2 to 4		Tu., at 11 Lab., M., 1 to 4 Th., 8 to 11	T. 200 T. 3, 5, 10	Cunningham
105-105 2 or 4		M., W., at 11 Lab., to be arranged	T. 200	Clevenger
107-107	3	Tu., at 4 Lab., M., 1 to 5 W., 1 to 5	T. 200 T. 3, 5, 10	Stoltz
110	2	F., at 11; Sat. 8 to 12	T. 200	Cunningham
111-111	2	To be arranged		
113-114	2	To be arranged		
115	2	M., W., at 11	T. 109	Erf
116	2	M., at 11; Lab., to be arranged	T. 109	Erf
117-118 5 to 10		To be arranged		Erf
119-120	1	To be arranged		

For Short Courses Only

52	3	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	T. 200	
52	3	Tu., Th., at 9 Lab., M., 1 to 4 F., 1 to 4	T. 200	
53-53	3	Tu., Th., at 3 Lab., W., 8 to 11 Th., 8 to 11	T. 109	

DAIRYING—Continued

Course No.	Hours	Time	Room	Instructor
55	3	To be arranged		
56	3	To be arranged		
57-58	3	To be arranged		

ECONOMICS AND SOCIOLOGY**Economics**

135-136	3	M., W., F., at 8	P. 12	Ruggles
		M., W., F., at 8	P. 13	
		M., W., F., at 8	P. 9	
		M., W., F., at 9	P. 12	Lockhart
		M., W., F., at 9	P. 13	Drury
		M., W., F., at 9	P. 9	
		M., W., F., at 10	P. 12	Hammond
		M., W., F., at 10	P. 13	Drury
		M., W., F., at 10	P. 9	
		M., W., F., at 1	P. 12	
		M., W., F., at 1	P. 13	Drury
		M., W., F., at 2	P. 12	Parry
		M., W., F., at 2	P. 13	Drury
		M., W., F., at 2	P. 9	
		M., W., F., at 3	P. 12	
		M., W., F., at 3	P. 13	
		M., W., F., at 4	P. 12	
136-135	3	M., W., F., at 3	P. 6	Walradt
139	3	Tu., Th., at 9	P. 10	Huntington
				Harris
		Tu., Th., at 10	P. 10	Huntington
				Harris
		Tu., Th., at 1	P. 10	Huntington
				Harris
		Tu., Th., at 2	P. 10	Huntington
				Harris
		Lab., M., 8 to 10	P. 11	Huntington
				Harris
		W., 8 to 10	P. 11	Huntington
				Harris
		M., 1 to 3	P. 11	Huntington
				Harris
		W., 1 to 3	P. 11	Huntington
				Harris
147-148	2	Tu., Th., at 9	P. 12	Walradt
171	3	Tu., Th., at 9	P. 10	Huntington
				Harris
		Tu., Th., at 10	P. 10	Huntington
				Harris
		Tu., Th., at 1	P. 10	Huntington
				Harris

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., at 2	P. 10	Huntington
		Lab., M., 8 to 10	P. 11	Harris
				Huntington
				Harris
		W., 8 to 10	P. 11	Huntington
				Harris
		M., 1 to 3	P. 11	Huntington
				Harris
		W., 1 to 3	P. 11	Huntington
				Harris

Sociology

101-102	3	M., W., F., at 8	P. 6	Burgess
		M., W., F., at 8	P. 10	
		M., W., F., at 9	Ha. 101	Bruder
		M., W., F., at 9	Ha. 200	
		M., W., F., at 10	P. 6	
		M., W., F., at 10	Ha. 208	Bruder
		M., W., F., at 1	P. 7	Mark
		M., W., F., at 2	P. 10	Mark
		M., W., F., at 2	Ha. 200	
		M., W., F., at 3	P. 10	McKenzie
		M., W., F., at 4	P. 9	
102-101	3	M., W., F., at 3	Ha. 200	
107	3	M., W., F., at 2	O. 2	McKenzie
120	3	M., W., F., at 2	P. 7	Mark

ENGINEERING DRAWING

101	2	M., W., 8 to 10	Br. 203,	All In-
			Ha. 301	structors
		M., W., 1 to 3	Br. 203, 200	
		Tu., Th., 8 to 10	Ha. 301	
		Tu., Th., 1 to 3	Br. 203, 200	
		F., Sat., 8 to 10	Br. 104,	
			Ha. 301	
101	2	To be arranged		
102	3	To be arranged		
102	3	L., M., at 2	Br. 203, 1	All In-
		M., at 9	Br. 203	structors
		W., at 10	Br. 203, 200	
		W., at 3	Br. 203	
		F., at 8	Br. 203, 200	
		F., at 10	Br. 200, 104	
		F., at 1	Br. 203, 200	
		F., at 2	Br. 104,	
			200, 1	

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
		F., at 3	Br. 203	
		Lab., M., W., 8 to 10	Br.	
		M., W., 1 to 3	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		F., Sat., 8 to 10	Br.	
108	3	Tu., Th., at 8; Th., 1 to 4	Br. 200	Meiklejohn
125-125	2	L., Tu., at 1	Ha. 301	French,
		Th., at 9	Br. 1	Meiklejohn,
		Th., at 1	Br. 1, 104	Withrow,
			(2d Sem.)	Inagaky
		F., at 10	Br. 203	
		Lab., W., 8 to 11	Br.	
		W., 1 to 4	Br.	
		F., 8 to 11	Br.	
		F., 1 to 4	Br.	
127	1½	Sat., 8 to 11	Br. 203	French,
				Sheets,
				Turnbull
128	1½	Sat., 8 to 11	Br. 203	French

ENGLISH

101-104	2	M., W., at 10	Ph. 302	
		M., W., at 2	Ph. 304	
		Tu., Th., at 8	Ph. 202, 104,	
			302, P. 10	
		Tu., Th., at 9	Ph. 202, 104,	
			Ha. 200,	
			P. 109	
		Tu., Th., at 10	Ph. 302,	
			Ha. 100,	
			P. 6	
		Tu., Th., at 1	Ph. 202, 104,	
			P. 109	
		Tu., Th., at 2	Ph. 202, 104,	
			302, P. 109	
		Tu., Th., at 3	Ph. 202, 204,	
			104, 302	
104-101	2	Tu., Th., at 8	Ph. 102	
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 4	Ph. 102	
105-106	2	Tu., Th., at 10	Ph. 104	Beck
121-122	2	M., F., at 8	Ph. 304	Lindsley
		Tu., Th., at 3	Ph. 304	Lindsley
		M., F., at 10	Ph. 304	Lindsley
		Tu., Th., at 10	Ph. 304	Ketcham
		Tu., Th., at 1	Ph. 304	Ketcham

ENGLISH—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., at 1	Ph. 302	Lindsley
		Tu., Th., at 2	Ph. 304	Ketcham
131-133	3	M., W., F., at 8	Ph. 102	Taylor
		M., W., F., at 9	Ph. 302	Beck
		M., W., F., at 2	Ph. 104	Cooper
		M., W., F., at 3	Ph. 104	Percival
		M., W., F., at 4	Ph. 104	Wiley
133-131	3	M., W., F., at 8	Ph. 204	Graves
		M., W., F., at 9	Ph. 104	Cooper
		M., W., F., at 2	Ph. 302	Craig
		M., W., F., at 3	Ph. 302	Andrews

For Short Courses Only

91-92	2	Tu., Th., at 8	Ph. 5	Dishong
		Tu., Th., at 10	Ph. 5	Dishong
		Tu., Th., at 1	Ph. 5	Dishong
		Tu., Th., at 2	Ph. 5	Dishong
		Tu., Th., at 3	Ph. 5	Dishong

EUROPEAN HISTORY

101-102	3	M., W., F., at 8	U. 201	All In- structors
		M., W., F., at 8	U. 202	
		M., W., F., at 9	U. 201	
		M., W., F., at 10	U. 201	
		M., W., F., at 1	U. 201	
		M., W., F., at 1	U. 202	
		M., W., F., at 2	U. 201	
		M., W., F., at 3	U. 201	
		M., W., F., at 4	U. 201	

FARM CROPS

101	4	M., W., F., at 3	T. 109	Stemple
		Lab., M., 8 to 10	T. 113	
		Tu., 8 to 10	T. 113	
		W., 8 to 10	T. 113	
		F., 8 to 10	T. 113	
101	4	M., W., F., at 10	T. 109	Stemple
		Lab., Tu., 1 to 3	T. 113	
		W., 1 to 3	T. 113	
		Th., 1 to 3	T. 113	
		F., 1 to 3	T. 113	
109	2 or 3	Tu., Th., at 10;	T. 109	
		M., F., 1 to 3		
111 2 or 3		Tu., Th., at 10;	T. 109	
		M., F., 1 to 3		
113	3	Tu., Th., at 9; W., 1 to 4	T. 109	

FARM CROPS—Continued

Course No.	Hours	Time	Room	Instructor
115-116	5 to 10	To be arranged		
117-118	5 to 10	To be arranged		
121-122	1	To be arranged		

For Short Courses Only

51-52	4	M., W., F., at 2 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 Fri., 8 to 10	T. 109	
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FORESTRY

101-102	2	Tu., Th., at 8	H. F. 108	Lazenby
104	3	Tu., Th., at 8; Th., 1 to 3	H. F. 107	DuBois
105	3	M., W., at 9; M., 1 to 4	H. F. 108	Scherer
106	3	M., W., at 9; M., 1 to 4	H. F. 108	Scherer
107	4	M., W., F., at 10 Lab., F., 1 to 4	H. F. 108 H. F.	Pfleuger Scherer
111-112	2	Tu., Th., at 10	H. F. 108	Scherer
113-114	2	Tu., Th., at 10	H. F. 107	Lazenby
115	2	W., 1 to 5	H. F.	Scherer
116	4	M., W., F., at 10 Lab., W., 1 to 4	H. F. 108	Scherer
117-118	1	Fri., at 11	H. F. 108	
119-120	3 to 5	To be arranged	H. F.	All In- structors
121-122	3	M., W., at 9; Tu., 1 to 4	H. F. 107	Pfleuger
123	4	M., W., F., at 8 Lab., Th., 1 to 4	H. F. 108	Pfleuger
124	2	Tu., Th., at 9	H. F. 108	Pfleuger
125	3	M., W., at 10 F., 1 to 4	H. F. 107	
126	3	M., W., at 8 Lab., Th., 1 to 4	H. F. 108	Scherer
127	2	To be arranged	H. F.	
128	3	M., W., at 10; F., 1 to 4	H. F. 107	Pfleuger
151-152	4	To be arranged	H. F.	Lazenby
153-154	4	To be arranged	H. F.	Scherer
155	2	To be arranged	H. F.	Scherer
156	2	To be arranged	H. F.	Scherer
157-158	4	To be arranged	H. F.	Lazenby
159-160	2	To be arranged	H. F.	Lazenby

For Short Courses Only

51	4	M., T., Th., F., at 9	H. F. 106	Lazenby
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GEOLOGY

Course No.	Hours	Time	Room	Instructor
103	3	M., W., F., at 10	O. 105	Bownocker
104	3	M., W., F., at 10	O. 105	Prosser
105	3 to 5	To be arranged; field trips Saturday		Prosser
106	3	To be arranged; field trips Saturday		Hills
107-108	2 to 5	To be arranged		
151-151	3	L., Tu., Th., at 8	O. 105,	
		Tu., Th., at 9	(2d sem.) 5	Verwiebe
		Tu., Th., at 10	O. 105	Mark
		Tu., Th., at 1	O. 5, (2nd sem.) 105	Mark
		Tu., Th., at 2	O. 105,	
		Tu., Th., at 3	(2d sem.) 5	Verwiebe
		Lab., W., at 8	O. 105	Verwiebe
		W., at 9	O. 204	Cottingham
		W., at 1	O. 204	Verwiebe
		W., at 2	O. 204	Verwiebe
		F., at 8	O. 204	Cottingham
		F., at 9	O. 204	Verwiebe
		F., at 1	O. 204	Cottingham
		F., at 2	O. 204	Verwiebe
162	4	M., W., F., at 9	O. 204	Verwiebe
167	3 or more	M., W., F., at 8	O. 202	
			O. 105	Bownocker

GERMAN

101-102	4	M., Tu., W., Th., at 8	U. 320	Keidel,
				Reese
		M., Tu., W., Th., at 8	H. F. 106	Rey
		M., Tu., W., Th., at 9	U. 320	Eisenlohr
		M., Tu., W., Th., at 10	U. 320	Barrows
		M., Tu., W., Th., at 1	U. 320	Kotz
		M., Tu., W., Th., at 2	U. 320	Reese
		M., Tu., W., Th., at 3	U. 320	Thomas,
				Lewisohn
101	4	M., Tu., W., Th., at 4	H. F. 106	Reese
102-103	4	M., Tu., W., Th., at 4	U. 320	Busey
103-104	4	M., Tu., W., Th., at 8	U. 319	Eisenlohr
		M., Tu., W., Th., at 9	U. 319	Barrows
		M., Tu., W., Th., at 9	U. 412	Busey
		M., Tu., W., Th., at 10	U. 319	Evans
		M., Tu., W., Th., at 1	U. 319	Thomas
		M., Tu., W., Th., at 2	U. 319	Thomas
		M., Tu., W., Th., at 3	H. F. 107	Keidel

GERMAN—Continued

Course No.	Hours	Time	Room	Instructor
103-106	4	M., Tu., W., Th., at 10	H. F. 106	Lewisohn
		M., Tu., W., Th., at 1	H. F. 106	
		M., Tu., W., Th., at 4	U. 319	Kotz
104	4	M., Tu., W., Th., at 4	H. F. 106	Reese

HISTORY AND PHILOSOPHY OF EDUCATION

101-102	3	M., W., F., at 10	Ha. 101	Anderson
		M., W., F., at 4	Ha. 101	Anderson

HOME ECONOMICS

101-102	5	L., M., W., at 9	H. E. 103	White
		M., W., at 2	H. E. 2	White
		Q., F., at 8	H. E. 2	White
		F., at 10	H. E. 221	White
		F., at 1	H. E. 2	White
		F., at 3	H. E. 2	White
		Lab., M., W., 1 to 3; 2nd sem. Tu., Th., 3 to 5.	H. E. 1, 3, 4, 2	
		M., W., 9 to 11; 2nd sem. Tu., F., 10 to 12.	H. E. 2	
		Tu., Th., 8 to 10	H. E. 2	
		Tu., Th., 1 to 3	H. E. 2	
104	3	M., W., F., at 10	H. E. 103	
104	3	M., W., F., at 10	H. E. 103	
		M., W., F., at 2	H. E. 103	
105-106	2 to 5	Th., at 2	H. E. 221	Van Meter
		Lab., to be arranged	H. E. 201, 202	
108	2	Tu., Th., at 9	H. E. 2	Hathaway
110	4	Tu., Th., at 8	H. E. 103	Skinner
		Lab., M., W., 11 to 1	H. E. 104, 103	
110	4	Tu., Th., at 8	H. E. 103	Skinner
		Tu., Th., at 1	H. E. 103	Skinner
		Lab., Tu., F., 10 to 12	H. E. 104, 118	
		M., W., 11 to 1	H. E. 104, 103	
111-112	2	L., M., at 9	H. E. 118, 221	Walker
		M., at 2	H. E. 118, 221	Tucker
		Tu., at 8	H. E. 118, 221	Walker

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., at 2	H. E. 118, 221	Walker
		Th., at 9	H. E. 118, 221	Walker
		Th., at 1	H. E. 118, 221	Walker
		Lab., Tu., 9 to 11	H. E. 115, 116, 117	
		W., 8 to 10		
		W., 1 to 3		
		Th., 2 to 4		
		F., 8 to 10		
		F., 1 to 3		
113	3	L., W., at 11	H. E. 2	Hathaway
		Th., at 10	H. E. 2	Hathaway
		Lab., Tu., F., 10 to 12	H. E. 13, 14	
		Tu., Th., 1 to 3		
		M., W., 1 to 3		
113	3	L., W., at 11	H. E. 2	Hathaway
		Tu., F., 10 to 12	H. E. 13, 14	
116	3	Th., at 10	H. E. 2	Hathaway
		Lab., M., W., 8 to 10	H. E. 13, 14	
		M., W., 1 to 3		
118-118	3	L., Th., at 10; Tu., 10 to 12; F., 1 to 3	H. E. 118, 111	Tucker
		L., F., at 9; Tu., Th., 3 to 5	H. E. 118, 111	Tucker
119	3	M., W., F., at 11	H. E. 118	Walker
		M., W., F., at 3	H. E. 118	Walker
119	3	M., W., F., at 11	H. E. 118	Walker
121	3	M., at 10	H. E. 118	White
		Lab., Tu., Th., 8 to 10	H. E. 202	
		M., W., 2 to 4	H. E. 202	
123-124	2	Tu., at 2	H. E. 103	Adams
		Lab., to be arranged		
201-202	2 to 5	To be arranged	H. E.	White

HORTICULTURE

101	4	M., W., F., at 10	H. F. 113	Davis
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
103-104	4	M., W., F., at 8	H. F. 113	Montgomery
		Lab., M., 2 to 4		
		W., 2 to 4		
105-106	4	M., W., F., at 9	H. F. 112	Paddock
		Lab., M., 1 to 3		
107	3	M., W., F., at 10	H. F. 112	Paddock

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
109-110	3	Tu., at 11 Lab., to be arranged	H. F. 113	Paddock
118	4	L., M., W., F., at 10 M., W., F., at 2 Lab., Th., 8 to 10 F., 2 to 4	H. F. 206 H. F. 206	Paddock Davis
120	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	Davis
121-122	4	M., W., F., at 11 Lab., M., 2 to 4	H. F. 113	Davis
131-132	4	M., W., F., at 9 Lab., F., 2 to 4	H. F. 113	Mont- gomery
133	3	Tu., at 9; Tu., 1 to 5	H. F. 113	Mont- gomery
141-142	4	M., W., F., at 8 Th., 1 to 3	H. F. 112	
143	3	Tu., at 8 Lab., Tu., Th., 1 to 3	H. F. 112	
144	3	Tu., Th., at 9; Sat. 8 to 10	H. F. 112	
145	3	Tu., Th., at 9; F., 1 to 3	H. F. 112	
146	4	M., W., F., at 10 Tu., 1 to 3	H. F. 204	
147-148	3	L., Th., at 8 Lab., M., W., 1 to 3	H. F. 112	
151-152	2	Tu., at 10 Sat., 9 to 12	H. F. 112	Elwood
154	3	M., W., F., at 10	H. F. 112	Elwood
156	2	M., W., at 8	H. F. 204	Elwood
157-158	3	M., at 11 Tu., Th., 1 to 3	H. F. 112	Elwood
159-160	4	To be arranged	H. F.	
162	4	W., at 11 Lab., to be arranged	H. F. 112	Elwood
164	3	Tu., at 11 M., W., 1 to 4	H. F. 112	Elwood
165	3	Th., at 10 Lab., to be arranged	H. F. 112	Elwood
166	3	Tu., at 11; M., W., 1 to 4	H. F. 112	Elwood
168	4	To be arranged	H. F.	
169-170	3	To be arranged	H. F.	
172	1	To be arranged	H. F.	
201-202	2 to 5	To be arranged	H. F.	

For Short Courses Only

51-52	4	M., W., F., at 3 Lab., Tu., 8 to 10	H. F. 112	Runyan
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HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
53-54	4	M., W., F., at 1 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 F., 8 to 10	H. F. 113	Davis
55-56	4	M., W., F., at 1 Lab., Th., 8 to 10	H. F. 112	Mont- gomery
57-58	4	M., W., F., at 8 Lab., Th., 1 to 3	H. F. 107	Paddock
59	4	M., W., F., at 10 Lab., W., 1 to 3	H. F. 204	Paddock
60	4	M., Tu., Th., F., at 9	H. F. 106	Elwood
62	4	M., W., F., at 9 Lab., Th., 1 to 3	H. F. 205	
64	4	M., W., F., at 10 Lab., Tu., 1 to 3	H. F. 203	Mont- gomery
65-66	4	M., W., F., at 10 Lab., F., 2 to 4	H. F. 205	

MATHEMATICS

107-107	3	M., W., F., at 8 M., W., F., at 9 M., W., F., at 10 M., W., F., at 1 M., W., F., at 2 M., W., F., at 3	U. 310 U. 310 U. 313 H. F. 108 U. 310 H. F. 108	
121	3	L., Tu., Th., at 8 Tu., Th., at 9 Tu., Th., at 1 Tu., Th., at 2 Lab., Tu., 8 to 10 F., 8 to 10 W., 1 to 3 F., 1 to 3	U. 310 U. 310 U. 310 U. 310 U. 313 U. 313 U. 312 U. 313	
121	3	L., Tu., Th., at 2 Lab., F., 2 to 4	U. 312 U. 312	

METEOROLOGY

101	2	Tu., Th., at 10	O. 202	Bownocker
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MILITARY SCIENCE AND TACTICS

1-1	1	M., Tu., W., F., at 11	Ha.	Converse, Thorpe
2-2	1	M., Tu., W., at 11	Ha.	Converse Thorpe

PHYSICAL EDUCATION

For Men

Course No.	Hours	Time	Room	Instructor
101-102	1	To be arranged	Gym.	Ohlson, Marsh
110	2	To be arranged		
112	2	To be arranged		

For Women

131-132	1	F., at 11; 3 hours to be arranged	Gym.	Meyer, Hammett
133-134	1	4 hours to be arranged	Gym.	Meyer, Hammett
135	3	To be arranged	Gym.	Meyer, Hammett
136	3	To be arranged	Gym.	Meyer, Hammett

PHYSICS

101	6	Daily at 9; Sat., 8 to 11	Ph. 205, Br. 109	Jackson
103-104	4	M., W., F., at 8	Ph. 205	Earhart, Smith
		M., W., F., at 3	Ph. 205	Earhart, Smith
		Lab., W., 9 to 11		
		W., 1 to 3		
105-106	4	Tu., Th., at 10	Ph. 205	
		Tu., Th., at 3	Ph. 205	
		Lab., Tu., Th., 8 to 10		
		Tu., Th., 1 to 3		
109-109	3	M., W., F., at 8	Ph. 202	Cole
		M., W., F., at 9	Ph. 202	Cole
		M., W., F., at 10	Ph. 202	Cole
		M., W., F., at 1	Ph. 202	Cole
		M., W., F., at 2	Ph. 202	Cole
		M., W., F., at 3	Ph. 202	Cole

PHYSIOLOGY

101-102	3	M., W., F., at 8	Bio. 200	
		M., W., F., at 9	Bio. 100	
		M., W., F., at 10	Bio. 100	
		M., W., F., at 1	Bio. 200	
		M., W., F., at 2	Bio. 200	
		M., W., F., at 3	Bio. 200	
104	3	Tu., Th., 8 to 11	Bio. 208	Belle, Seymour

PSYCHOLOGY

Course No.	Hours	Time	Room	Instructor
101-102	3	M., W., F., at 8	U. 400	All In- structors
		M., W., F., at 8	U. 401	
		M., W., F., at 8	U. 406	
		M., W., F., at 9	U. 400	
		M., W., F., at 9	U. 401	
		M., W., F., at 10	U. 400	
		M., W., F., at 10	U. 401	
		M., W., F., at 1	U. 400	
		M., W., F., at 1	U. 401	
		M., W., F., at 2	U. 400	
		M., W., F., at 2	U. 401	
		M., W., F., at 3	U. 400	
		M., W., F., at 4	U. 400	
102-101	3	M., W., F., at 3	U. 401	

ROMANCE LANGUAGES

French

101	4	M., Tu., W., Th., at 8	U. 303	Cardon
101-102	4	M., Tu., W., Th., at 8	H. F. 203	Haddox
		M., Tu., W., Th., at 9	H. F. 203	Moore
		M., Tu., W., Th., at 9	H. F. 204	Ditchy
		M., Tu., W., Th., at 10	U. 303	Bowen
		M., Tu., W., Th., at 10	U. 302	Peirce
		M., Tu., W., Th., at 1	U. 303	Cardon
		M., Tu., W., Th., at 1	U. 302	
		M., Tu., W., Th., at 2	H. F. 204	Moore
		M., Tu., W., Th., at 2	H. F. 203	
		M., Tu., W., Th., at 3	U. 302	
		M., Tu., W., Th., at 4	U. 301	
For Teachers Only				
101	4	M., Tu., W., Th., at 8	U. 303	Bruce
103-104	4	M., Tu., W., Th., at 8	U. 302	Chapin
		M., Tu., W., Th., at 9	U. 302	Bruce
		M., Tu., W., Th., at 1	H. F. 203	Ditchy
		M., Tu., W., Th., at 2	U. 303	Hamilton
		M., Tu., W., Th., at 3	U. 301	Cardon
103	4	M., Tu., W., Th., at 10	H. F. 203	Moore

Spanish

101-102	4	M., Tu., W., Th., at 8	U. 301	Ingraham
		M., Tu., W., Th., at 8	H. F. 205	Ditchy
		M., Tu., W., Th., at 9	U. 303	Chapin
		M., Tu., W., Th., at 9	Ha. 206	Haddox
		M., Tu., W., Th., at 10	Br. 104	Hamilton

ROMANCE LANGUAGES—Continued

Course No.	Hours	Time	Room	Instructor
		M., Tu., W., Th., at 10	Ha. 206	
		M., Tu., W., Th., at 1	U. 301	Moore
		M., Tu., W., Th., at 2	U. 301	Ingraham
		M., Tu., W., Th., at 2	Ha. 206	
		M., Tu., W., Th., at 3	U. 303	Hamilton
		M., Tu., W., Th., at 3	Ha. 206	
101	4	M., Tu., W., Th., at 1	Ha. 206	Studler
101	4	M., Tu., W., Th., at 1	Ha. 206	Hamilton
103-104	4	M., Tu., W., Th., at 10	U. 301	Ingraham
103	4	M., Tu., W., Th., at 2	U. 302	Chapin

RURAL ECONOMICS

101-101	2	Tu., at 10; W., 1 to 4	Ha. 208	Phillips
102	2	Tu., at 11; Th., 8 to 11	Ha. 208	Falconer
103-103	4	M., W., F., at 8	Ha. 101	Falconer
		M., W., F., at 1	Ha. 101	Falconer
		Lab., Th., 1 to 5		
		Sat., 8 to 12		
104-104	3	M., W., F., at 8	Ha. 208	Vogt
		M., W., F., at 1	Ha. 208	Vogt
105	2	M., W., at 9	Ha. 204	Falconer
110	3	M., W., F., at 9	Ha. 208	Vogt
111	2	Tu., at 11; Th., 8 to 11	Ha. 208	Falconer
113	3	M., W., F., at 9	Ha. 208	Vogt
201-202	3 to 10	M., at 4	Ha. 208	Vogt

For Short Courses Only

51-51	4	Tu., Th., at 2	Ha. 208	Phillips
		Lab., M., Tu., 8 to 10	Ha. 209	
		Th., F., 8 to 10	Ha. 209	
52-52	4	To be arranged		
53	4	To be arranged		
54	4	To be arranged		

SCHOOL ADMINISTRATION

122	2	Tu., Th., at 10	U. Base	
127	2	Tu., Th., at 2	U. Base	

SHOPWORK

101-101	2	Tu., at 8; Tu., 1 to 4	S.	Beem
		Tu., at 10; F., 1 to 4	S.	Denman

SHOPWORK—Continued

Course No.	Hours	Time	Room	Instructor
103-103	2	Tu., at 1; Tu., 8 to 11	S.	Foust
		Tu., at 1; F., 8 to 11	S.	
		Th., at 10; M., 1 to 4	S.	
		Th., at 1; Th., 8 to 11	S.	
		Th., at 3; M., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	
		Tu., at 8; Tu., 1 to 4	S.	
		Tu., at 10; F., 1 to 4	S.	
		Tu., at 10; M., 1 to 4	S.	
		Tu., at 1; Tu., 8 to 11	S.	
		Tu., at 1; F., 8 to 11	S.	
		Tu., at 3; M., 8 to 11	S.	
		Th., at 2; Th., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	

For Short Courses Only

51-51	2	L., Tu., at 8	S.	
		Th., at 8	S.	
		Th., at 10	S.	
		Th., at 1	S.	
		Th., at 2	S.	
		Lab., M., 8 to 11	S.	
		W., 8 to 11	S.	
		F., 8 to 11	S.	
		M., 1 to 4	S.	
		W., 1 to 4	S.	
52-52	2	F., 1 to 4	S.	
		L., Tu., at 8	S.	
		Th., at 8	S.	
		Th., at 10	S.	
		Th., at 1	S.	
		Th., at 2	S.	
		Lab., M., 8 to 11	S.	
		W., 8 to 11	S.	
		F., 8 to 11	S.	
		M., 1 to 4	S.	
		W., 1 to 4	S.	
		F., 1 to 4	S.	

SURVEY OF AGRICULTURE

1	M., at 4	H. E. 100	Vivian
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VETERINARY MEDICINE

151	3	M., W., F., at 8	V. L. 101
152	3	To be arranged	

VETERINARY MEDICINE—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
51	3	M., W., F., at 2	V. C.	
52	3	M., W., F., at 2	V. C.	

ZOOLOGY AND ENTOMOLOGY

Zoology

101-102	3	L., M., W., at 8	B. Z. 67	All In- structors
		M., W., at 9	B. Z. 67	
		M., W., at 10	B. Z. 67	
		M., W. at 1	B. Z. 67	
		M., W., at 2	B. Z. 67	
		M., W., at 3	B. Z. 67	
		Lab., M., 8 to 10	B. Z. 65, 69	
		M., 1 to 3	B. Z. 65, 69	
		Tu., 8 to 10	B. Z. 65, 69	
		Tu., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10	B. Z. 65, 69	
		Th., 1 to 3	B. Z. 65, 69	
		F., 8 to 10	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	
101	3	Tu., Th., at 3	B. Z. 67, 65	
		Sat., 8 to 10		
121-122	3 to 5	L., Tu., at 1	B. Z. 111	Kostir
		Lab., Tu., 2 to 4		
		Th., F., 1 to 4		
129	2 to 5	M., W., at 11	B. Z. 67	Barrows
130	2 to 5	M., W., at 11	B. Z. 67	Barrows
131-132	3	M., W., F., at 11	B. Z. 109	Osborn, Krecker
139-140	2	M., at 10; Tu., 1 to 4	B. Z. 207	Hine
141-142	3 to 5	To be arranged	B. Z.	
143-144	1	W., at 4	B. Z. 109	
145	3	To be arranged	B. Z.	
153-154	2 to 5	Tu., Th., at 9	B. Z. 67	Barrows
157-158	3 to 5	M., F., at 10; W., 1 to 4	B. Z. 111	Krecker
223-224	3 to 5	To be arranged		
241-242	5 to 10	To be arranged		
247-248	5	To be arranged		

Entomology

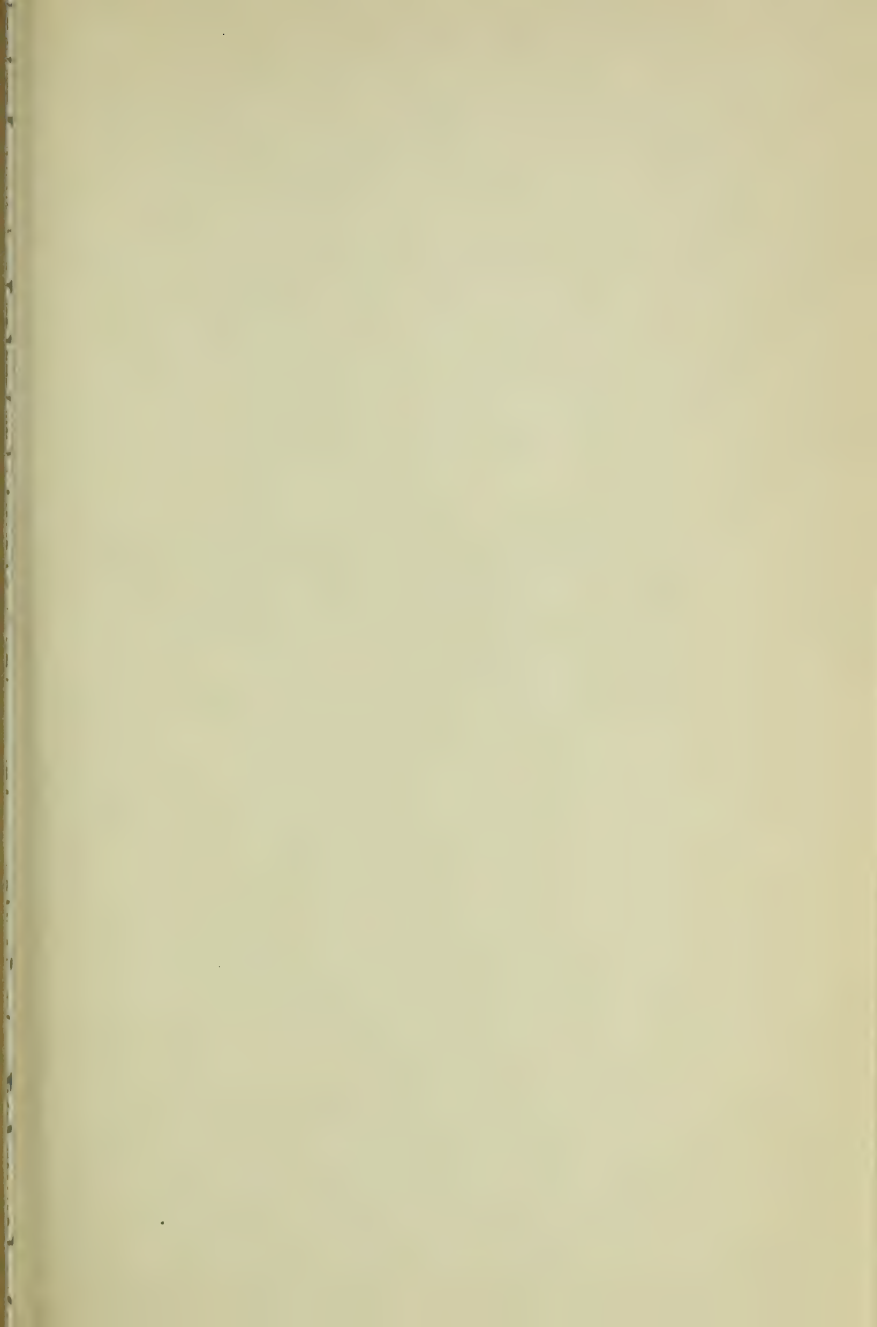
107-108	3	L., Tu., Th., at 8	B. Z. 67	Metcalf
		Tu., Th., at 1	B. Z. 67	Metcalf
		Lab., W., 8 to 10	B. Z. 65, 69	Metcalf
		W., 1 to 3	B. Z. 65, 69	Metcalf

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
112	3	Tu., Th., at 10	B. Z. 207	Hine
		Lab., Th., 1 to 4	B. Z. 207	
		Sat., 8 to 11	B. Z. 207	
113-114	4	M., W., at 3	B. Z. 109	
		Lab., M., F., 1 to 3	B. Z. 107	
137-138	3 to 5	Tu., Th., at 10	B. Z. 107	Osborn
		Lab., M., W., F., 1 to 4		
141-142	3 to 5	To be arranged	B. Z.	
143-144	1	W., at 4	B. Z. 109	
147	2	Tu., Th., at 10	B. Z. 209	Hine
148	2	Tu., Th., at 9	B. Z. 109	Osborn
149-150	3 to 5	M., F., at 11	B. Z. 211	Metcalf
		Lab., F., 8 to 11		
151-152	3	Tu., at 11	B. Z. 211	Metcalf
		Lab., Tu., 2 to 5		
		F., 1 to 4		
155-156	3	M., W., F., at 8	B. Z. 207	Hine
241-242	5 to 10	To be arranged	B. Z.	

For Short Courses Only

51-52	4	M., W., Th., F., at 2	B. Z. 207	Hine
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The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XXI

FEBRUARY, 1917

NUMBER 16

COLLEGE OF AGRICULTURE

1917 - 1918

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice at Columbus, Ohio, under Act of Congress, July 16, 1894.

UNIVERSITY CALENDAR

1917

Entrance examinations, Tuesday to Saturday, June 19 to 23, 8 A. M.

Summer Session, Thursday, June 21 to Thursday, August 16.

Entrance examinations, Tuesday to Saturday, September 11 to 15, 8 A. M.

Registration Day—First Semester—Tuesday, September 18.

President's Annual Address, Thursday, September 20, 11 A. M.

Latest date for registration of candidates for a degree at the Commencement of June, 1918, October 1.

Registration Day, Short Courses in Agriculture—First Term—Tuesday, October 16.

Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 21.

Thanksgiving recess begins November 28, 1 P. M., and ends December 4, 8 A. M.

Christmas recess begins Friday, December 21, 6 P. M.

1918

Christmas recess ends Tuesday, January 8, 8 A. M.

Registration Day, Short Courses in Agriculture—Second Term—Tuesday, January 8.

Final examinations, Wednesday, January 23 to Thursday, January 31.

First semester ends Thursday, January 31, 6 P. M.

Farmers' Week, Monday, January 28 to Friday, February 1.

Registration Day—Second Semester—Tuesday, February 5.

Washington's Birthday, Friday, February 22.

Close of Second Term, Short Courses in Agriculture, Friday, March 15.

Mid-semester reports to the Deans, Saturday, March 16.

Easter recess, Friday, March 22, 6 P. M., to Tuesday, April 2, 8 A. M.

Memorial Day, Thursday, May 30.

Competitive Drill—Cadet Regiment—Saturday, June 1.

Final examinations, Wednesday, June 5 to Thursday, June 13.

Commencement, Tuesday, June 18.

Entrance examinations, Tuesday, June 25 to Saturday, June 29, 8 A. M.

Summer Session, Monday, June 24 to Friday, August 16.

ADMINISTRATION

BOARD OF TRUSTEES

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OSCAR E. BRADFUTE.....	Xenia
FRANK E. POMERENE.....	Coshocton
BENJAMIN F. McCANN.....	Dayton
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Residence: University Grounds—2056.

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Residence: 1956 Iuka Ave.—5835.

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Office: 101 University Hall—99314.
Residence: 1348 Neil Ave.—16310.

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Office: 107 University Hall—99353; N. 939.
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Residence: 16 Fourteenth Ave.—11364.

COLLEGE OF AGRICULTURE

Dean.....ALFRED VIVIAN
Office: 100 Townshend Hall—99328.
Residence: 375 W. Eighth Ave.—16605.

Secretary.....VERLE C. SMITH
Office: 100 Townshend Hall—99328; Campus 431—N. 2206
Residence: 422 W. Eighth Ave.—16495.

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises eleven colleges and a graduate school, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Engineering
College of Agriculture	College of Homoeopathic
College of Arts, Philosophy and Science	Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1917-18.

(NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.)

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this college consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS IN AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

Students who do not present the recommended units in foreign language will be required to elect foreign language in their freshman year.

REQUIREMENTS IN HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in

mathematics; one in history; one in physics; and four at large.

Students who do not present these units will be required to carry courses in the University to make up the deficiency and this may delay their graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

No student under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

ADMISSION TO SHORT COURSES

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life. In addition to this the Entrance Board may require the candidate to submit a letter from the principal or superintendent of the school last attended, recommending him to the University.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College except the curriculum in Home Economics, is made uniform.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

First Semester		Second Semester	
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Zoology	(101) 3	Zoology	(102) 3
English	(101) 2	English	(104) 2
*Mathematics	(107) 3	*Physics	(109) 3
*Drawing	(125) 2	*Geology	(151) 3
*Shopwork	(101) 2	*Shopwork	(103) 2
Survey of Agriculture	1	Physical Education	1
Physical Education	1	Military Drill	1
Military Drill	1		

Students may substitute 4 hours of German, French or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students planning to specialize in Farm Crops should schedule Botany 101-102 the first year and Zoology 101-102 the second year.

Students expecting to major in Landscape Architecture should consult the outlined curriculum. (See page 10.)

*These courses may be taken in either semester.

SECOND YEAR

First Semester			Second Semester		
Agricultural Chemistry	(103)	5	Soils	(152)	5
Botany	(101)	4	Botany	(102)	4
Military Drill		1	Military Drill		1

And at least 7 hours from the following:

Physiology	(101)	3	Physiology	(102)	3
Psychology	(101)	3	Psychology	(102)	3
Economics	(101)	3	Economics	(102)	3
Entomology	(107)	3	Entomology	(108)	3
Foreign Language		4	Foreign Language		4
Animal Husbandry	(101)	4	Animal Husbandry	(102)	4
Horticulture	(101)	4	Horticulture	(118 or 120)	4
*Farm Crops	(101)	4	*Agricultural Engineering	(101)	4
*Dairying	(101)	4	Dairying	(102)	4
Geology	(105)	3	Geology	(106)	3
English (105, 121, 141			English (106, 122, or 133)		2 or 3
or 145)	2 or 3		Meteorology	(101)	2
Anatomy	(101)	3	Anatomy	(102)	3

*These subjects may be taken in either semester.

THIRD YEAR

Major subject	(at least)	4	Major subject	(at least)	4
Minor elections		13	Minor elections		13

FOURTH YEAR

Major subject	(at least)	4	Major subject	(at least)	4
Minor elections		13	Minor elections		13

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 101-102, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural and forestry subjects must take Economics 101-102, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on page 10.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum as outlined on page 12.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine and Dentistry.

FARM EXPERIENCE

As a prerequisite for graduation in all the courses in the College of Agriculture, excepting Home Economics, students graduating in June, 1919, must have had one summer of farm experience; those graduating in 1920, two summers of farm experience; 1921, three summers of farm experience; and 1923, one full year of farm experience. This requirement shall be in-

terpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his junior year.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and thirty-six semester hours, exclusive of military drill and physical education, the student will be recommended for the degree, Bachelor of Science.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103.

SECOND YEAR

First Semester		Second Semester	
Architecture	(131) 2	Art	(141) 2
Civil Engineering	(131) 5	English	(133) 3
Engineering Drawing	(108) 3	Horticulture	(154) 3
Horticulture	(151) 2	Modern Language	4
Modern Language	4	Horticulture	(152) 2
Military Drill	1	Architecture	(132) 2
		Military Drill	1

THIRD YEAR

Architecture	(133) 3	Architecture	(136) 3
History		History	
Art	(133) 2	Art	(136) 2
Economics	(101) 3	Economics	(102) 3
Civil Engineering	(133) 1	Horticulture	(162) 4
Horticulture	(157) 3	Horticulture	(158) 3
Landscape Design		Landscape Design	
Entomology	(155) 3	Elective	2 or 3
Elective	2 or 3		

FOURTH YEAR

Architecture	(113) 2	Botany	(116) 3
Art	(142) 3	Pathology	
Horticulture	(159) 4	Horticulture	(172) 1
Horticulture	(164) 3	Proseminary in Landscape	
Civic Design		Horticulture	(160) 4
Horticulture	(169) 3	Advanced Design	
Psychology	(101) 3	Horticulture	(170) 3
		Horticulture	(166) 3
		Horticulture	(165) 3

HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Art	(119)	1	English	(104)	2
English	(101)	2	Zoology	(102)	3
Zoology	(101)	3	or		
or			Botany	(102)	4
Botany	(101)	4	Modern Language	(102, 104 or 106)	4
Modern Language	(101 or 103)	4	French or German		
French or German			Home Economics	(112)	2
Home Economics	(111)	2	Physical Education		1
Physical Education		1			

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic			Home Economics	(102)	5
Home Economics	(101)	5	Physiology	(102)	3
Physiology	(101)	3	Modern Language	(104 or 106)	4
Modern Language	(103)	4	French or German		
French or German			Art	(141)	2
Art	(131)	2	Physical Education		1
Physical Education		1			

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Bacteriology	(107)	4	Home Economics	(104)	3
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Bibliography	(103)	½	Home Economics	(118)	3
Engineering Drawing	(127)	1½	Engineering Drawing	(128)	1½

Electives to make at least 15 hours throughout the year.

FOURTH YEAR

Sociology	(101)	3	Sociology	(102)	3
Home Economics	(105)	2 to 5			
Home Economics	(119)	3			

Electives to make at least 15 hours throughout the year. Electives for the third and fourth years must include not less than six hours of English, and for students not offering entrance credit in American history, six hours of American history.

Requirements for a Degree

Upon the satisfactory completion of the course as outlined, under the restrictions and requirements prescribed above, the student will be recommended for the degree, Bachelor of Science.

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester			Second Semester		
Entomology	(107)	3	Entomology	(108)	3
Botany	(101)	4	Botany	(102)	4
Modern Language		4	Modern Language		4
French, Spanish or German			French, Spanish or German		
Farm Crops	(101)	4	Military Drill		1
Art	(131)	2	Elective		6
or					
Public Speaking	(101)	2			
Military Drill		1			

THIRD YEAR

Entomology	(113)	4	Entomology	(114)	4
Entomology	(153)	2	Botany	(116)	3
Bacteriology	(107)	4	Bacteriology	(108)	4
Physiology	(101)	3	Physiology	(102)	3
or			or		
Anatomy	(101)	3	Anatomy	(102)	3
Architecture	(111)	2	Elective		3
Elective		2 or 3			

NOTE:—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(149)	3	Entomology	(112)	3
Entomology	(147)	2	or		
Entomology	(151)	3	Entomology	(150)	3
Elective		9 or 10	Entomology	(148)	2
			Entomology	(152)	3
			Elective		9 or 10

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline on the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 7-9.

ANIMAL HUSBANDRY

- First Year:** Uniform first year
- Second Year:** Animal Husbandry (101) 4 hours, (102) 4 hours
- Third Year:** Animal Husbandry (103) 4 hours, (104) 4 hours
Animal Husbandry (105) 3 hours, (106) 4 hours
Animal Husbandry (116) 4 hours
Animal Husbandry (117) 3 hours, (118) 3 hours
Veterinary Medicine (151) 3 hours, (152) 3 hours
- Fourth Year:** Animal Husbandry (107) 4 hours, (108) 4 hours
Animal Husbandry (109) 2 hours, (110) 1 hour
Animal Husbandry (119) 2 hours, (120) 1 hour
Animal Husbandry (112) 3 hours, (126) 3 hours
Animal Husbandry (122) 1 hour
Animal Husbandry (124) 2 hours

DAIRYING

- First Year:** Uniform first year
- Second Year:** Dairying (101) 4 hours, (102) 4 hours
- Third Year:** Dairying (115) 2 hours, (105) 4 hours
Dairying (111) 2 hours, (107) 3 hours
Bacteriology (107) 4 hours, (110) 4 hours
- Fourth Year:** Dairying (113) 2 hours, (110) 2 hours
Dairying (103) 4 hours, (114) 2 hours
Dairying (119) 1 hour, (116) 2 hours
Dairying (120) 1 hour

FLORICULTURE

- First Year:** Uniform first year
- Second Year:** Horticulture (101) 4 hours, (132) 4 hours

- Third Year:** Horticulture (141) 4 hours, (142) 4 hours
Horticulture (145) 3 hours, (156) 2 hours
- Fourth Year:** Horticulture (143) 3 hours, (146) 4 hours
Horticulture (147) 3 hours, (148) 3 hours
Horticulture (144) 3 hours

POMOLOGY AND VEGETABLE GARDENING

- First Year:** Uniform first year
- Second Year:** Horticulture (101) 4 hours, (120) 4 hours
- Third Year:** Horticulture (103) 4 hours, (104) 4 hours
Horticulture (105) 4 hours, (106) 4 hours
- Fourth Year:** Horticulture (109) 3 hours, (110) 3 hours
Horticulture (133) 3 hours, (132) 4 hours
Horticulture (121) 4 hours, (122) 4 hours
Horticulture (131) 4 hours, (146) 4 hours

PLANT PATHOLOGY

- First Year:** Uniform first year
- Second Year:** Botany (120) 3 hours
- Third Year:** Botany (127) 4 hours, (128) 4 hours
Botany (139) 4 hours, (140) 4 hours
- Fourth Year:** Botany (125) 4 hours, (126) 4 hours
Botany (133) 4 hours, (134) 4 hours

RURAL ECONOMICS

- First Year:** Uniform first year
- Second Year:** Economics (101) 3 hours, (102) 3 hours
Rural Economics (101) 2 hours
- Third Year:** Rural Economics (103) 4 hours, (104) 3 hours
- Fourth Year:** Rural Economics (102) 2 hours, (111) 2 hours
Rural Economics (105) 2 hours, (110) 3 hours
Rural Economics (113) 3 hours
Economics (177) 2 hours, (178) 2 hours

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture

curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are co-operative between the University and other colleges of the State, and become effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the co-operating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capitol University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science at the end of five years.

FIRST YEAR

First Semester			Second Semester		
English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Zoology	(101)	3	Zoology	(102)	3
American, European or Industrial History		3	American, European or Industrial History		3
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

SECOND YEAR

First Semester			Second Semester		
English	(141 or 145)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	4	Botany	(102)	4
Engineering Drawing	(125)	2	Art		2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Physics	(103)	4	Physics	(104)	4
Geology		3	Geology		3

Elective 6 or 7 hours the year on approval of adviser.

FOURTH YEAR

Animal Husbandry	4	Choice of any two of these the
Agricultural Chemistry	4	fourth year. Remaining two the
Rural Economics	4	fifth year.
Farm Crops or Soils	4	

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Zoology	(101)	3	Zoology	(102)	3
American, European or			American, European or		
Industrial History		3	Industrial History		3
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

SECOND YEAR

English	(141 or 145)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	4	Botany	(102)	4
Engineering Drawing	(125)	2	Art	(131)	2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

First Semester			Second Semester		
Economics	(101)	3	Economics	(102)	3
Physics	(103 or 105)	4	Physics	(104 or 106)	4
Geology	(103)	3	Geology	(104)	3
Zoology	(107)	3	Zoology	(108)	3
or			or		
Botany	(125)	4	Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year.)

Agricultural Chemistry (4 hours throughout the year.)

In addition to these six hours elective throughout the year, with the approval of the Department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the Department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Entomology	(107 and 108)	3
Rural Economics	(103 and 104)	4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the Junior year a choice of either Entomology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	4	Botany	(102)	4
Physical Education		1	Physical Education		1

SECOND YEAR

First Semester		Second Semester	
Chemistry	(127) 4	Agricultural Chemistry	(123) 5
Physiology	(101) 3	Physiology	(102) 3
French or German	4	French or German	4
Art	(119) 1	Home Economics	(112) 2
Home Economics	(111) 2	Textiles	
Textiles		Engineering Drawing	(128) 1½
Engineering Drawing	(127) 1½	Physical Education	1
Physical Education	1		

THIRD YEAR

Economics	(101) 3	Economics	(102) 3
Home Economics	(101) 5	Home Economics	(102) 5
Foods		Foods	
Bacteriology	(107) 3	Home Economics	(104) 3
English	(141 or 145) 3	Sanitation	
Art	(131) 2	English	(133) 3
		Art	(141) 2

FOURTH YEAR

Agricultural Chemistry	(124) 4	Home Economics	(110) 4
Psychology	(101) 3	Dietetics	
Sociology	(101) 3	Psychology	(102) 3
Home Economics	(118) 3	Sociology	(102) 3
House Decoration		Home Economics	(119) 3
Elective	3	House Decoration	
		Elective	3

FIFTH YEAR

Home Economics	(105) 3	Home Economics	(106) 3
Proseminary		Proseminary	
History of Education	(101) 3	History of Education	(102) 3
Elective	9	Elective	9

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3), 108 (2), 109 (2).
 Sociology 107 (3), 120 (3).
 Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).
 Chemistry 151-152, 153-154.
 Philosophy 115 (2)—116 (2).
 Greek 115 (2)—116 (2).
 Physiology 104 (3).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements of the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

First Term			Second Term		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Agricultural Engineering	(51)	4	Dairying	(52)	3
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

SECOND YEAR

Horticulture	(53)	4	Horticulture	(54)	4
Soils	(53)	3	Soils	(54)	3
Dairying	(53)	3	Agricultural Engineering	(52)	4
Rural Economics	(51)	4	Animal Husbandry	(54)	4
Farm Crops	(51)	4	Farm Crops	(52)	4
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52)	4	Agricultural Engineering	(54)	4
Animal Husbandry	(57)	4	Animal Husbandry	(56)	4
Military Drill		1	Military Drill		1

First Term

Second Term

Choice of at least 7 hours from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Forestry	(51) 4		
Entomology	(51) 4		
Dairying	(55) 3		

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Physical Education	1	Physical Education	1
Military Drill	1	Military Drill	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Physical Education	1	Physical Education	1
Military Drill	1	Military Drill	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Forestry	(51) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(65) 4	Horticulture	(64) 4
Dairying	(55) 3	Horticulture	(62) 4

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year, but yet desire some training in the principles of agriculture. On other farms are found mature men who are past the usual school age, but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigation in research and their practical application to work on the farm.

DAIRYING

The work in Dairying is divided into two courses of four weeks each. The first course, "Farm Dairying and Advanced Registry," beginning January 7, 1918, and ending February 1, 1918, will be given to meet the demand of those who wish to receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufacturers," begins February 4, 1918, and ends March 1, 1918. This course has been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of

butter, cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this department and is given at a time of the year when the butter-makers, cheese-makers, ice cream-makers and milk men can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN, LYMAN AND BEAR, ASSISTANT PROFESSOR
T. G. PHILLIPS, MR. SALTER, MR. HUTCHISON, MR. McCLURE,
MR. SLEETH AND DEPARTMENT ASSISTANTS

AGRICULTURAL CHEMISTRY

103. General Agricultural Chemistry. Five credit hours. First semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

An introductory course on the chemistry of plants and animals.

Students expecting to major in Agricultural Chemistry or Soils are urged to consult with this department before registering for the above course.

115. General Agricultural Chemistry. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, a satisfactory course in organic chemistry. Mr. Phillips.

Lectures on the application of chemistry to plant and animal life. This course is intended for students who have had satisfactory preparation in organic chemistry, and for such students it takes the place of course 103 as a requirement. Students who have had work in quantitative analysis should consult with the department before registering for either of these courses.

123-124. Household Chemistry. Four credit hours. The year. (123) Home Economics, second year, second semester; (124) third year, first semester. Prerequisite, Chemistry 106 or 110. Mr. Lyman, Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed

by the analysis of foods and other materials of household interest.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103. Mr. Lyman.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

111-112. Chemistry of Animal Nutrition. Three to five credit hours. The year. Prerequisites, Agricultural Chemistry 103 or equivalent. Mr. Lyman.

For students specializing in animal husbandry.

***113. Chemistry of Insecticides and Fungicides.** Two credit hours. Second semester. One lecture and one laboratory period each week. Prerequisite, Agricultural Chemistry 103 or equivalent. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

***114. Plant Chemistry.** Two credit hours. Second semester. Two lectures each week. Prerequisite, Agricultural Chemistry 103 or equivalent preparation in organic and quantitative chemistry. Mr. Phillips.

Lectures will be given on the chemistry of plant constituents, plant metabolism and a few selected plant products.

***116. Plant Chemistry.** Two credit hours. Second semester. Six hours laboratory work each week. To be preceded or accompanied by Agricultural Chemistry 114. Mr. Phillips.

Work will be done along the lines of detection, determination and separation of plant constituents.

*Not given in 1917-1918.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103 or an equivalent preparation in quantitative analysis. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year. Mr. Salter.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Five credit hours. Second semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Vivian, Mr. Bear.

An introductory course on the origin and the chemical and physical properties of soils, their management and fertilization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

Students expecting to major in soils are urged to elect additional courses in general chemistry, qualitative and quantitative analysis and organic chemistry. In addition to the above, courses in bacteriology, plant physiology and physical chemistry are suggested.

153-154. Soil Fertility. Two credit hours. The year. Prerequisite, Soils 152. Mr. Bear.

Lectures and references reviewing the investigational work which has been and is now being conducted on some of the more important soil problems.

155-156. Chemical Analysis of Soils. Three credit hours. The year. One lecture and two laboratory periods each week. Prerequisite, permission of the instructor. Mr. McClure.

A study of the methods in the quantitative chemical analysis of soils.

157. Origin and Classification of Soils. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Soils 152. Mr. Bear.

A study of the soils of Ohio. Laboratory work will include practice in soil surveying. Field trips will be made, including a trip to the experimental farms at Wooster, and to several substation farms.

158. Soil Physics. Three credit hours. Second semester. One lecture and two laboratory periods each week. Prerequisite, permission of the instructor. Mr. Bear.

The application of the principles of physical chemistry to the study of soil problems.

159-160. Soil Literature. One credit hour. The year. Prerequisite, Soils 152. Mr. Bear.

Library work in reviewing all the important investigational work which has been done on some soil problem in which the student may be interested. Designed to familiarize the student with sources of information and current soil literature.

FOR GRADUATES

201-202. Research Work in Soils.

203-204. Soil Chemistry.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL EDUCATION

(See School Administration)

AGRICULTURAL ENGINEERING

Office, 205 Home Economics Building

PROFESSOR RAMSOWER, ASSISTANT PROFESSOR IVES,
MR McCUEN, MR. POTTER

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125. Mr. Ramsower, Mr. Potter.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; com-

position of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

106. Drainage. Three credit hours. Second semester. Mr. Ramsower, Mr. Ives, Mr. McCuen, Mr. Potter.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth and distance apart. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit.

110. Advanced Farm Machinery. Two credit hours. Second semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field machinery, including grain-binders, corn-harvesters, mowers, hay-loaders, spreaders, etc. Practice in assembling and disassembling the machines studied, together with problems covering various features of design and operation.

107. Farm Power. Three credit hours. First semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, steam engines, windmills and electric power.

108. Concrete Construction. Three credit hours. Second semester. Mr. Ives.

Lectures and laboratory covering the making of forms, simple test of concreting materials, proportioning materials for different purposes, mixing and placing, laying walks and floors, reinforcement, etc. Written reports will be required for each day's laboratory work.

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Ramsower, Mr. Ives, Mr. McCuen.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricultural engineering. Work may be chosen pertaining to farm

structures, drainage, farm power, concrete construction, or field machinery.

114. Design of Dairy Buildings. Two credit hours. Second semester. This course is designed for students specializing in Dairying, and must be preceded by Dairying 115 and Engineering Drawing 125. Mr. Ives.

A few lectures will be given relative to strength of materials and problems in design, but the greater part of the time will be devoted to the planning of ice-houses, milk-houses, dairy barns, cheese factories, condensories, manure pits, water supply and sewage disposal plants as related to the dairy business, following the specifications given in Dairying 115.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc; concrete and its uses; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, steam engines, and windmills.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

AGRICULTURAL EXTENSION

Office, 115 Townshend Hall

PROFESSOR WHEELER

102. Extension Methods. Two credit hours. Second semester. Two recitations each week. Open only to seniors in the College of Agriculture. Mr. Wheeler.

An introduction to extension methods and a discussion of the forms of organization for carrying on extension work.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT AND HOCKETT, ASSISTANT PROFESSOR A. M. SCHLESINGER, MR. WOOD, MR. WITCKE

101-102. History of the United States. (1763-1912). Three credit hours. The year. Mr. Hockett, Mr. Schlesinger, Mr. Wood, Mr. Wittke.

American History 101 is given also during the second semester, and American History 102 during the first semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1912. Text-book, discussion and collateral readings.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE, ASSISTANT PROFESSOR BUCK, MR. WARREN, MR. KNOUFF, MR. BAKER

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Baker.

Fishes, amphibians and reptiles.

102. Comparative Anatomy of the Vertebrates. Three to five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Required of students in the

Arts-Medicine and Science-Medicine courses. Prerequisite, Anatomy 101, Physiology 101 or Zoology 101 or an equivalent. Mr. Baker.

Birds and mammals.

103. **Vertebrate Embryology.** Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

Karyokinesis and the early development of fishes and amphibians.

104. **Vertebrate Embryology.** Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

The development of reptiles and birds.

105. **Anatomy of the Frog.** Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

106. **Anatomy of the Frog.** Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The histology and early development of the frog.

ANIMAL HUSBANDRY

Office, Judging Pavilion

PROFESSORS PLUMB AND KAYS, ASSISTANT PROFESSORS JACOBY, COFFEY, AND SALISBURY, MR. STONE AND
DEPARTMENT ASSISTANTS

101. **Types and Classes of Cattle and Sheep.** Four credit hours. First semester. Mr. Salisbury, Mr. Stone.

A discussion of the various types of cattle and sheep and the market classes. Judging work will include specimens of the various types and classes judged by score card, comparison, etc.

102. Types and Classes of Horses and Swine. Four credit hours. Second semester. Mr. Salisbury, Mr. Stone.

A discussion of the various types, classes and grades of horses and swine. Judging work will include score card and comparative studying of individuals and groups.

103. Breeds of Horses and Sheep. Four credit hours. First semester. Mr. Kays.

Lectures, text-books, and recitations upon the history, development, characteristics and adaptation of types and breeds of horses and sheep. Laboratory work includes judging types and breeds of horses and sheep one afternoon a week and occasional inspection trips to herds in the State.

104. Breeds of Cattle and Swine. Four credit hours. Second semester. Mr. Kays, Mr. Coffey.

This course covers the subject of cattle and swine on the same basis as Animal Husbandry 103.

105. Feeding Animals. Three credit hours. First semester. Mr. Plumb.

A consideration of the laws of nutrition, the character and composition of feed stuffs, and methods of feeding different kinds of farm animals under varying conditions. Work to a reasonable extent is required of students in calculating rations, in studying rations in practical use in the community, and suggesting improvements, if desirable.

106. Principles of Breeding. Four credit hours. Second semester. Mr. Kays.

Lectures, text-books and recitations upon the subject of heredity from various points of view in its application to breeding farm animals. Library research is required, and for laboratory work one afternoon a week is devoted to studying pedigree construction and working out problems in heredity from herd books. Students taking this course should have had either Animal Husbandry 103 or 104 and Zoology 101-102.

107. Animal Conformation and Stock Judging. Four credit hours. First semester. Prerequisites, Animal Husbandry 101-102, 103-104. Mr. Kays.

For advanced students only. A detailed consideration is given to type and breed characteristics, and the relationship of

form to function. Students electing this course will be required to take trips with the instructor to a limited number of stock farms where practice in judging may be obtained.

108. Live Stock Management. Four credit hours. Second semester. Three lectures and one laboratory period each week. This course should be preceded by Animal Husbandry 105 and 106. Mr. Coffey.

A series of lectures upon principles of management necessary to retention of native vigor and fecundity in improved stock. The commercial aspects of the management of pure bred horses, cattle, sheep and swine are discussed, followed by separate considerations of production for market of horses, beef, milk, mutton, wool and pork.

109. Horse Training, Harness and Vehicles. Two credit hours. First semester. Mr. Kays.

This course relates chiefly to light horses. The general principles of training horses are considered, followed by separate discussions of developing and marketing heavy harness, saddle, and light harness horses. The last eight lectures refer to vehicles and horse show appointments.

110. Meats and Meat Products. Four credit hours. Second semester. Three lectures and one laboratory period each week. Prerequisite, Animal Husbandry 101-102. Mr. Plumb.

Methods of slaughter of farm animals, the preparation of the carcass, and the various cuts and products derived therefrom.

112. Live Stock Marketing and Commerce. Three credit hours. First semester. Mr. Plumb.

A discussion of the purpose and work of live stock markets, methods of sale and shipment, the practice of the live stock markets and yards, the market classification and grading, the export and import trade, etc. Considerable library work is required in this subject, studying comparative market reports and market developments. Visits are also made to stock yards, transportation agencies, packing houses, etc.

116. Dairy Cattle. Four credit hours. Second semester. Prerequisite, Animal Husbandry 101-102. Mr. Salisbury.

The different breeds of dairy cattle will be studied, a limited amount of score card work conducted, and considerable judging

by comparison in group method. Dairy herds in the vicinity of Columbus will also be visited as conditions will permit.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern states, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to visit the poultry plant morning, noon and afternoon, to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

126. Wools and Other Animal Fibers. Three credit hours. Second semester. Mr. Plumb.

Lectures and seminary on the character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, the uses of fibers in manufacturing, etc. Laboratory work with microscope in studying fibers. Practice in shearing is required.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey, Mr. Stone.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Salisbury.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Second term. Second year. Mr. Stone.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

ARCHITECTURE

Office, 105 Brown Hall

PROFESSORS BRADFORD AND CHUBB, MR. HASKETT, MR. RONAN

131. Elements of Architecture. Two credit hours. First semester. Prerequisite, Art 131 and Engineering Drawing 125.

132. Elements of Architecture. Two credit hours. Second semester. Prerequisite, Architecture 131.

133. History of Architecture. Three credit hours. First semester. Prerequisite, Architecture 132.

136. History of Architecture. Three credit hours. Second semester. Prerequisite, Architecture 133.

History of modern architecture.

111. Photography. Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. Principles of Architectural Composition. Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 203 Hayes Hall

PROFESSOR KELLEY, MISS ROBINSON, MISS SHEPHERD, MR.
NORRIS, MR. CHRISTENSEN

131-132. Elementary Drawing. Two credit hours. The year. Two two-hour periods each week.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

Art 131 is given also during the second semester.

Art 132 is given also during the first semester.

133. Advanced Drawing. Two credit hours. Either semester. Prerequisite, Art 131-132. Two two-hour periods each week.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

136. Water Color Painting. Two credit hours. Either semester. Prerequisites, Art 133 and 141. Two two-hour periods each week.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. One lecture each week.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131, 141. Miss Shepherd.

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSOR MORREY, ASSISTANT PROFESSOR STARIN, MR.
FRONING, MISS MCCOY, AND DEPARTMENT ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mr. Froning, Miss McCoy, and department assistants.

This course is a prerequisite to all the elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationship of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical bio-chemical actions.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mr. Froning, Miss McCoy.

A study of the more important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation; also, in the lectures, ways of transmission and methods of protection against infectious disease; sanitation and the theories of immunity.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110 or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112 or equivalents. Mr. Morrey.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLICAL LITERATURE, HISTORY AND EXEGESIS

Office, 103 Orton Hall

PROFESSOR BREYFOGLE

101. Biblical Literature. Three credit hours. First semester. Lectures, quiz and reports. Miss Breyfogle.

A consideration of the literature, history and religion of the Old Testament.

This is a general course touching upon the historical crises of the Old Testament with an attempt to recreate the political, economic, and social conditions as a basis for the better understanding of the moral and religious teachings. A stereopticon will be used, showing the latest discoveries in Palestine, Egypt and Assyria.

102. Historical Christianity in Outline. Three credit hours. Second semester. Miss Breyfogle.

A consideration of Judaism, of the life, work and teachings of the Founder of Christianity, and of Apostolic teaching.

This course is intended to give the student a systematic knowledge of the New Testament in its historical setting. It will consider the relation of Christianity to Hellenic Judaism, the teachings of Jesus as shown by a comparison of the gospels, and the expansion of Christianity throughout the world during the Apostolic times. Stereopticon views will be freely used and an endeavor made to familiarize the student with the text.

***103-104. The History of Religion in Outline.** Three credit hours. The year. Lectures, quiz and reports. Miss Breyfogle.

A consideration of the great book religions of the world.

BIBLIOGRAPHY

Office, The Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogues and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS SCHAFFNER AND TRANSEAU, ASSISTANT PROFESSORS GRIGGS, DETMERS, AND STOVER, MR. SEARS AND DEPARTMENT ASSISTANTS

101-102. General Botany. Four credit hours. The year. Mr. Schaffner, Mr. Griggs, Miss Detmers, Mr. Stover, Mr. Sears.

Text-books: Curtis's Nature and Development of Plants (4th edition), Schaffner's Laboratory Outlines for General Botany (4th edition).

A general survey of the plant kingdom by the comparative method of morphological types and life cycles. A general view of the morphology, evolution and classification of plants from the lowest to the highest.

107. Plant Histology. Two credit hours. First semester. Prerequisite, Botany 101-102 or equivalent. Miss Detmers.

The physical structure and properties of protoplasm are studied, then, in order, the cell, the tissues, tissue systems and finally the histological structure of the plant organs are taken up. The course is designed as a preparation for the study of

*Not given in 1917-1918.

pharmacognacy, and also to assist those who wish to teach botany to prepare temporary and permanent mounts.

110. General Dendrology. Two credit hours. First semester. Mr. Sears.

Text-book: Schaffner's Field Manual of Trees.

A study of trees and shrubs, with practice in the identification of woody plants, in both summer and winter condition. Students are required to prepare a dendrological herbarium.

113. Morphology of the Higher Fungi. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, Botany 101-102. Mr. Stover.

A study of the fungous flora, both fleshy and woody forms, with especial reference to edible and poisonous mushrooms and to the wood-destroying species.

116. Plant Pathology. Three credit hours. Second semester. Lecture and laboratory. Prerequisite, Botany 101-102 or equivalent. Mr. Stover.

Text-book: Duggar's Fungous Diseases of Plants.

Representative bacterial and fungous diseases of horticultural and agricultural crops are studied in the laboratory. In the lectures, consideration is given to the natural symptoms and control of plant diseases and to the classification, life history and dissemination of pathogenic organisms.

120. Field Botany. Three credit hours. Second semester. Prerequisite, Botany 101. Mr. Griggs.

Excursions are made to the most interesting localities within reach of Columbus on Saturday. On Monday afternoon, material collected in the field is determined.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102 or equivalent. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors.

142. Dendrology of Conifers. Two credit hours. Second semester. Prerequisite, Botany 101-102. Mr. Schaffner.

A general study of conifers including identification, classification and distribution of North American species.

145-146. Structure and Identification of Wood. Two credit hours. The year. Prerequisite, Botany 101-102. Miss Detmers.

This course includes a study of the gross and microscopic structure of wood, identification of commercial woods, and the preparation of a collection of microscopic slides.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

117-118. Plant Ecology. Three credit hours. The year. Lecture and laboratory. Prerequisite, Botany 101-102 or equivalent and one additional year of some biological subject. Mr. Transeau.

The ecological relations of the forests, prairies and deserts of North America. Field work on the local plant associations.

121. Plant Genetics. Three credit hours. First semester. One lecture, one laboratory period and practicum. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the foundation principles of plant genetics are considered, including a study of fertilization and reduction, hybridization, heredity, Mendelian laws, fluctuations and mutations, together with methods of procedure in crossing both lower and higher plants. Emphasis is placed on heredity in wheat and corn. Students electing this course should also take Zoology 129.

127-128. General Plant Pathology. Four credit hours. The year. Laboratory and field work. Prerequisite, Botany 101-102 or equivalent and one additional year of some biological subject. Mr. Griggs.

Text-books: Stevens' Fungi and Stevens and Hall's Diseases of Economic Plants.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisite, Botany 101-102 or equivalent and one additional year of some biological subject. Mr. Schaffner, Mr. Transeau, Mr. Griggs, Miss Detmers, Mr. Stover.

139-140. Methods in Plant Pathology. Three to five credit hours. The year. Prerequisite, Botany 127-128 or equivalent. Mr. Stover.

FOR GRADUATES

- 201-202. Research in Systematic Botany.
203-204. Research in Morphology and Cytology.
205-206. Research in Physiology and Ecology.
207-208. Research in Mycology and Plant Pathology.
209-210. Seminary in Botany.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

Text-book: Stevens and Hall's Diseases of Economic Plants.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON AND EVANS, ASSISTANT PROFESSORS BOORD AND OLIN, MR. HUMMELL, MR. YOUNG, MR. SWEENEY, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, Mr. Young, and department assistants.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Hummell, Mr. Young, and department assistants.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Hummell, Mr. Young, and department assistants.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105 and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Hummell, Mr. Young, and department assistants.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures and one quiz each week. Prerequisite, an acceptable course in general chemistry. Mr. Boord.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours each week. Laboratory open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord.

The preparation of typical organic compounds.

CIVIL ENGINEERING

Office, 108 Brown Hall

PROFESSOR ENO, MR. NEILSON, MR. FAEHNLE

131. Surveying. Five credit hours. First semester. Forestry and Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Neilson, Mr. Faehnle.

132. Forestry Surveying. Five credit hours. Second semester. Forestry, second year. Prerequisite, Civil Engineering 131. Mr. Neilson, Mr. Faehnle.

133. Sanitation, Drainage, Water Supply. One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSORS CUNNINGHAM,
CLEVENGER, AND STOLTZ

101. Principles of Dairying. Four credit hours. Either semester. Prerequisite to all other courses in dairying. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the relation of dairying to general agriculture; the composition of dairy products and the laws governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. Farm Dairying. Four credit hours. Second semester. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Either semester. Prerequisite, Bacteriology 107. Mr. Cunningham.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Two or four credit hours. Either semester. Mr. Clevenger.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento and camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice-Cream Making. Two credit hours. Either semester. Prerequisite, Dairying 101. Mr. Cunningham.

Lectures will be given on the theory and practice of ice-cream making. Laboratory work will consist of making ice-cream and other frozen products.

111. Dairy Mechanics. Two credit hours. Either semester. Mr. Clevenger.

This course consists of one lecture hour and one three-hour laboratory period. The construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, pulleys, pipe fitting, and soldering, and the operation of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Two credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, Economic Dairying. This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used. Second, Investigational Work. This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

115. Dairy Buildings. Two credit hours. First semester. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint, taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories and refrigerating plants. Must be followed by Agricultural Engineering 114.

116. Milk Condensing. Two credit hours. Second semester. Mr. Erf.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

121. Dairy Herd Management. Nine credit hours. Either semester. Prerequisite, Dairying 101-102, and permission of the instructor. May be scheduled only by men doing Cow Testing Association work. Mr. Erf.

The work of the course includes visiting not less than twenty herds for at least eight consecutive months. During these visits the milk of each cow is weighed and tested for fat and total solids, weighing feeds and calculating the cost, selecting profitable feeds, calculating feed costs, labor costs and determining other items of expense in order to arrive at the profit or loss of each cow in the herd. Suggestions for increased profits and improving the sanitary conditions must be incorporated in a monthly report.

119-120. Proseminary. One credit hour. The year.

Seminary on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

FOR GRADUATES

201-202. Advanced Dairying.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. **Elementary Dairying.** Three credit hours. Either term. One lecture, one quiz and one laboratory period each week. First year, Three-Year Course in Agriculture. Mr. Cunningham.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skim milk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. **Dairy Production and Manufacturing.** Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. **Farm Cheesemaking.** Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. **Farm Buttermaking.** Three credit hours. Second term. Mr. Clevenger.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, **Economical Dairying.** This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, **Investigational Work.** This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

(See Engineering Drawing)

ECONOMICS AND SOCIOLOGY

Office, 5 Page Hall

PROFESSORS HAGERTY, HAMMOND, LOCKHART, HUNTINGTON, AND RUGGLES, ASSISTANT PROFESSORS WALRADT, PARRY AND NORTH, MR. DRURY, MR. BRUDER, MISS LOUISE MARK, MR. McKENZIE, MR. BICE, MR. GEPHART, MR. PFEIFFER, AND DEPARTMENT ASSISTANTS

ECONOMICS

101-102. Principles of Economics. Three credit hours. The year. Not open to first-year students. Should precede all courses in Economics except 131, 133. Concurrent 139. Mr. Hammond, Mr. Lockhart, Mr. Ruggles, Mr. Parry, Mr. Drury, Mr. Bice, Mr. Gephart.

A study of the laws of production, exchange, distribution and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures and individual investigation.

Economics 102 is given also during the first semester. Mr. Walradt.

Economics 101 is given also during the second semester. Mr. Walradt.

139. Elements of Accounting. Three credit hours. First semester. Prerequisite, registration in Economics 101-102. Mr. Huntington and assistants.

An introduction to practical accounting, including the preparation and interpretation of business statements.

This course should be followed by Economics 171.

171. Principles of Accounting. Three credit hours. Second semester. Prerequisite, Economics 139. Mr. Huntington and assistants.

The principles of modern accounting, including a study of some of its problems, especially those connected with the balance sheet and the income statement, as the valuation of assets, and the treatment of good will, depreciation, capital stock, profits, surplus, reserves, etc.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 101-102. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans and financial administration, currency legislation, and the development of banking institutions.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102 or Economics 101-102. Miss Mark.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Mr. North, Mr. Bruder, Miss Mark, Mr. McKenzie.

Not open to first-year students.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading and individual investigations.

Sociology 101 is given also during the second semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Mr. McKenzie.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman and Medieval periods. The modern family, its functions and its problems.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN, WILLIAMS, AND TURNBULL, MR. GILBERT, MR. SEVENSEN, MR. INAGAKY, MR. BATESOLE, AND DEPARTMENT ASSISTANTS

101. Elementary Mechanical Drawing. Two credit hours. Either semester. Mr. French and department assistants.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Engineering Drawing 101. Lettering, orthographic, isometric and oblique projections. Mr. French and department assistants.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Engineering Drawing 125.

***123. Engineering Drawing.** Two credit hours. First semester.

125. Mechanical Drawing. Two credit hours. Either semester. College of Agriculture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Engineering Drawing 127.

Engineering Drawing 127 and 128 are required in Home Economics, third year.

***137-138. Engineering Drawing.** Two credit hours. The year. Prerequisite, Engineering Drawing 123 or 101.

*Not given in 1917-1918.

A course especially for forestry students. Practice in topographic drawing, lettering, tracing and blue-printing, and the design of simple engineering structures, such as culverts, trestles, small wooden bridges and dams.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, AND GRAVES, ASSISTANT PROFESSORS COOPER, BECK, KETCHAM, ANDREWS, AND PERCIVAL, MR. CRAIG, MR. DISHONG, MR. WILEY, MISS ROBINSON, MISS McCUTCHEON, MR. LINDSLEY, MR. MOORE, MR. FOLEY, AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101-104. Mr. Beck.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101-104, 105. Mr. Beck.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor, Mr. Graves, Mr. Andrews. Second semester: Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant and Poe; of Hawthorne, Emerson, Whittier, Longfellow and Lowell; and of Walt Whitman; with a brief survey of recent literature.

141. Nineteenth Century Poetry. Three credit hours. First semester. No prerequisite course. Mr. Taylor, Mr. Cooper, Mr. Andrews.

Wordsworth, Shelley, Keats, and their contemporaries.

145. Nineteenth Century Prose. Three credit hours. First semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Coleridge, Lamb, Landor, DeQuincy, Hazlitt and Carlyle.

FOR SHORT COURSES ONLY

91-92. **Elementary English.** Two credit hours. The year. Description, narration, exposition and argumentation. Mr. Dishong.

PUBLIC SPEAKING

101. **Public Speaking.** Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Lindsley.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

102. **Debating.** Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Lindsley.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

ENTOMOLOGY

(See Zoology and Entomology)

EUROPEAN HISTORY

Office, 204 University Hall

PROFESSORS SIEBERT, McNEAL, AND PERKINS, MR. HARRIS

101. **Medieval History.** Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

102. **Modern History from 1500 A. D.** Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

FARM CROPS

Office, 112 Townshend Hall

PROFESSOR PARK, ASSISTANT PROFESSOR WIGGANS, AND
DEPARTMENT ASSISTANTS

101. **Field Crop Production.** Four credit hours. Either semester. Three lectures and one laboratory period each week.

Prerequisite, Botany 101-102 or equivalent, prerequisite or concurrent, Soils 152. Mr. Wiggans.

A study of the history, adaptation, culture, uses and distribution of the cereal, forage and miscellaneous crops. Laboratory study of the principal types and varieties.

111. Forage Crops. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101. Mr. Wiggans.

Lectures and recitations on the characters, uses and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification of forage crops and in seed standardization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

109. Cereal Crops. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101. Mr. Wiggans.

The object of this course is to acquaint the student with the principal literature relating to cereal crops. A discussion of certain important principles of crop production is taken up in connection with the experimental work. Laboratory in classification, judging and grading of cereals.

113. Plant Breeding. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101 or equivalent. Mr. Park.

A study of variation, heredity, Mendel's law, etc., and the application of genetic principles to the breeding of field crops.

119-120. Minor Investigations. Two to four credit hours. The year. Prerequisite, Farm Crops 109 or 113 and permission of the instructor. Mr. Park, Mr. Wiggans.

The work is planned with special reference to Ohio conditions.

FOR GRADUATES

201-202. Research in Plant Breeding and Crop Production.

203-204. Seminary in Farm Crops.

For description of graduate work in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Crop Production. Four credit hours. The year.
Mr. _____.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

FORESTRY

Office, 101 Horticulture and Forestry Building

ASSISTANT PROFESSOR SCHERER, MR. PFLUEGER, AND
DEPARTMENT ASSISTANTS

101. Introduction to Forestry. Two credit hours. First semester. Lectures and field work. Mr. Scherer.

A general presentation of what trees are, how they live and grow, and what they do. A specific study of the trees and shrubs on the campus, in the city parks, the University woodlots and nearby woodlands.

102. Silvics. Two credit hours. Second semester. Lectures and field work. Prerequisite, Forestry 101. Mr. Scherer.

A continuation of the study of trees and shrubs from the forester's standpoint, and the characteristics not only of species but of stands, societies and associations of forest trees.

104. Arboriculture and Tree Surgery. Three credit hours. Second semester. Two lectures or recitations and one three-hour period of field work each week. Mr. DuBois.

The cultivation and management of trees for various specific purposes, such as wind-breaks, hedges, shade and ornament, small plantations for post and pole timber, for maple syrup, for nuts. The care of farm wood-lots; treatment of diseased and injured trees. City forestry.

NOTE: The above three courses while designed for Forestry students are open and adapted to students of other departments.

105-106. Silviculture. Three credit hours. The year. Two lectures and one three-hour period of field work each week. Prerequisites, Botany 101-102, Forestry 101-102. Mr. Scherer.

A review of soil, climate, exposure and other ecological factors influencing forest growth; description of typical woodlands in forests; collecting and testing forest-tree seeds. Care of woodlands and forests including natural regeneration, pruning and thinning.

107. Forest Mensuration. Four credit hours. First semester. Prerequisite, Forestry 101-102. Mr. Pflueger, Mr. DuBois.

Methods of measuring the volume of felled and standing trees. The preparation of volume tables, form-factor tables and taper tables. Timber estimating by the various methods used in practice. Study of age, rate of growth and future yield of trees and forest. Stump and complete stem analyses.

111. Forest Protection. Two credit hours. First semester. Lectures and recitations. Mr. Scherer.

Protection of forests from fire and other inanimate enemies, from insects, fungi and other animate enemies.

112. Forest Craft. Two credit hours. Second semester. Lectures and demonstrations. Mr. Pflueger.

Camping, types of tents and other shelter. Camp cookery, packing, ranger cabins, trails, forest telephone and telegraph lines, bridges, first aid to the sick and injured.

113. Forest Economics. Two credit hours. First semester. Lectures and recitations. Prerequisite, Forestry 105-106. Mr. Scherer.

The economic value and benefits of forestry. National and State forest areas; National and State private forests; forestry of foreign countries; importance of the lumber industry and woodworking industries.

114. Forest Policy. Two credit hours. Second semester. Prerequisite, Forestry 113. Mr. Scherer.

Functions of the federal government, the states, counties, municipalities and communities relative to forestry. Forest

laws; civil service regulations; forest education and training; relation of public welfare to forestry.

115. Grazing and Range Investigations. Two credit hours. First semester. One lecture and field laboratory work each week. Prerequisites, Botany 102 and Forestry 102. Mr. Scherer.

Historical development; the function and object of grazing; rules and regulations, past and present; the principles governing the same; methods of running stock, both sheep and cattle, and the effect on the range and forest; brands and branding. A study of the most important range plants.

116. Forest Products. Four credit hours. Second semester. Lectures and laboratory work. Prerequisite, Forestry 105. Mr. Scherer.

The physical properties of wood, the various methods of wood preservation, woodworking plants and industries, various uses of forest by-products.

117-118. Proseminary. One credit hour. The year. Mr. Scherer, Mr. Pflueger, Mr. DuBois.

119-120. Advanced Forestry. Three to five credit hours. The year. Open as a fourth-year elective in Forestry. Mr. Scherer, Mr. Pflueger.

Investigation and research. Subjects to be assigned.

121. Lumbering. Three credit hours. First semester. Two lectures and one three-hour period each week. Prerequisite, Forestry 107. Mr. Pflueger.

The methods of logging used in the principal lumber regions of the United States. Detailed study of the methods of transportation including logging, railways, pole roads, inclines, timber chutes, tramways, dams, river driving, rafting, fluming, steam logging and determination of stumpage values.

122. Forest Utilization. Three credit hours. Second semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 121. Mr. Pflueger.

Detailed study of the various types of saw mills. Methods of milling and the management of lumber manufacturing plants. Log scaling and mill-scale studies. Seasoning and grading of lumber. Utilization of waste in manufacture. Determination

of lumber costs and profits; logging and lumber accounts; timber bonds.

123. Forest Management. Four credit hours. First semester. Three lectures and one three-hour period of field work each week. Prerequisites, Forestry 106-107, 124; Civil Engineering 131-132. Mr. Pflueger, Mr. DuBois.

The principles underlying the management of forests. Study of the increment of forests; determination of the rotation and the size and distribution of the age classes in a forest. Forest surveying and mapping.

124. Forest Finance and Administration. Two credit hours. Second semester. Lectures and recitations. Prerequisite, Forestry 107. Mr. Pflueger.

Forest valuation and statics. The laws of compound interest as applied to forestal investments. A study of the cost, sale, expectation and replacement value of forests. Future returns from forestry. Methods of administering forest properties. Organizing the National forest force with special reference to the problems arising in the practice of forestry. State and private administration. Game and bird reservations in connection with forest areas. The National park movement.

125. Silviculture. Three credit hours. First semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 106. Mr. Scherer.

A study of forest reproduction by natural and artificial means; reforestation and afforestation; tree propagation, practice in seed beds and nurseries; sowing seeds and transplanting of forests; establishment, improvement and extension of woodlands.

126. Silvicultural Problems. Three credit hours. Second semester. Prerequisite, Forestry 125. Mr. Scherer.

Research work in the various phases of silviculture.

127. Principles of Forestry. Two credit hours. First semester. Lectures with occasional recitations and field trips. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry. The problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it—all

serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary to tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Not open to Forestry students, but adapted to students of other departments.

128. Forest Organization. Three credit hours. Second semester. Two lectures and one three-hour period of field work each week. Prerequisite, Forestry 123. Mr. Pflueger, Mr. DuBois.

Study of forest working-plans, determination and regulation of the yield. Forest working-plans in Europe and America. The preparation of a working-plan for a definite forest area is required.

FOR SHORT COURSES ONLY

51. Farm Woodlot. Four credit hours. First term. Lectures, laboratory and field work. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes such as wind-breaks, hedges, shade and ornament trees, maple syrup, nuts. The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

GEOLOGY

Office, 104 Orton Hall

PROFESSOR BOWNOCKER, ASSISTANT PROFESSORS HILLS AND
CARMAN, MR. VERWIEBE, MISS CLARA MARK,
MR. COTTINGHAM

103. Inorganic Geology. Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models and museum materials.

104. Historical Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103. Mr. Carman.

A general course in paleontological and stratigraphical geology, illustrated by lantern views, maps, and specimens. The development of organisms and the classification and distribution of the geological formations, especially those of Ohio, are considered. After the first of April, some of the Friday lectures will be replaced by field trips on Saturdays.

151. Geology. Three credit hours. Either semester. Two recitations or lectures and one two-hour laboratory period each week. Agriculture, first year. Mr. Verwiebe, Miss Mark, Mr. Cottingham.

Physical and economic geology. The principles of geology will be presented in the light of their practical bearing upon agriculture. The common rock-forming minerals and rocks and geologic maps are studied in the laboratory; while in the field various illustrations of geological processes are studied.

162. Elementary Physiography. Four credit hours. Second semester. Miss Mark.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere and the ocean. Recitations, lectures, map work and field work.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Field Geology. Three to five credit hours. First semester. Prerequisite, Geology 101 or 103 and 104 or 151. Mr. Carman.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

A study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves

the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Hills.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Carman.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three credit hours. First semester. Prerequisite, Geology 103 and 104. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin. The coals of the Appalachian field.

GERMAN

Offices, 317 and 318 University Hall

PROFESSORS M. B. EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, LEWISOHN, BUSEY, AND KEIDEL, MR. KOTZ, MR. REESE, AND DEPARTMENT ASSISTANTS

101-102. Elementary German. Four credit hours. The year. All instructors.

German 102 is given also during the first semester.

German 101 is given also during the second semester.

103. Intermediate German. Four credit hours. First semester. Prerequisite, German 101-102 or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose and a classical drama supplemented by discussions of syntax; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units in German.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 100A Hayes Hall

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year. Prerequisite, Psychology 101-102. Mr. Anderson.

Text: Graves's A History of Education (three volumes) and Graves's Great Educators of Three Centuries.

HOME ECONOMICS

Office, 120 Home Economics Building

PROFESSOR WHITE, ASSISTANT PROFESSORS VAN METER AND HATHAWAY, MISS TUCKER, MRS. WALKER, MISS SKINNER, MISS LINDER, MRS. ADAMS AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Two lectures, one quiz, and two laboratory periods each week. Prerequisite, Chemistry 106 or 110. Miss White, Miss Skinner, Miss McGuire.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost and value of the nutrients in the various food materials.

104. Sanitation. Three credit hours. Either semester. Three lectures each week. Prerequisite or concurrent, Bacteriology 107. Miss Linder.

Location and construction of the house, water supply, plumbing, heating, ventilating and lighting. Interdependence of home and public agencies in securing sanitation and hygiene. Special attention is given to emergencies, first aid to the injured, and home nursing.

108. Teaching of Home Economics. Two credit hours. Second semester. Prerequisites, Home Economics 101-102, 111-112, Psychology 101. Miss Van Meter, Miss Hathaway, Mrs. Adams.

This course is designed for students intending to teach home economics. Survey of home economics, examination of courses of study, lesson-plans and study of various types of schools.

111-112. Textiles. Two credit hours. The year. One lecture and one laboratory period each week. Prerequisite or concurrent, Art 119. Mrs. Walker, Miss Tucker, Miss Miller.

The study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway, Miss Miller.

The careful selection and combination of materials, the drafting of patterns, and the designing and making of a simple dress.

116. Dress. Three credit hours. Second semester. One lecture and two laboratory periods each week. Miss Hathaway, Miss Miller.

Continuation and amplification of Home Economics 113. Outline of history of costume and continuation of the study of selection and combination of materials in their application to dress.

The lecture may be taken as a one-hour course without the laboratory.

118. The House. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Art 131, Home Economics 112. Home Economics 104, Economics 101, Art 141, either prerequisite or concurrent. Miss Tucker.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. The House. Three credit hours. Either semester. Three lectures each week. Continuation of 118. Prerequisites, Economics 102, Art 141, Home Economics 102, 118, 104 or 110. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

121. Food Problems. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisites, Chemistry 106 or 110, Home Economics 101-102, and consent of instructor. Miss Linder, Miss Skinner.

Problems of markets, fuels, equipment and labor involved in selection, purchase, preparation and service of food.

123-124. Practice Teaching in Home Economics. Two credit hours. The year. Both semesters must be elected. One lecture and one laboratory period each week. Prerequisite, Home Economics 108. Mrs. Adams.

Observation work, arranging courses of lessons, practice teaching.

125-126. Survey of Home Economics. Three credit hours. The year. One lecture and two laboratory periods each week. Required in curriculum for Public Health Nurses and elective for certain irregular students by consent of instructor. Miss White, Miss Bumpas.

Principles of the selection and preparation of normal low cost dietaries, marketing, feeding of infants, house sanitation, household management, economic and hygienic aspects of textiles and clothing.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Proseminary. Two to five credit hours. First semester. One lecture each week. Prerequisite, eighteen hours of required home economics work. Miss Van Meter.

Readings and reports on home economics topics. Problems assigned for individual research.

106. Proseminary. Two to five credit hours. Second semester. One lecture each week. Continuation of Home Economics 105. Prerequisite, Home Economics 105, and consent of the instructor. Miss Van Meter.

Special research continued. Reports and conferences.

110. Dietetics. Four credit hours. Either semester. Two lectures and two laboratory periods each week. Prerequisites, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Skinner.

A study of the chemical, physiological and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Translation of standard dietaries into food materials and some exercises in making dietary studies and in preparing food for the sick.

FOR GRADUATES

201-202. Research in Home Economics.

For description of graduate course in this department see the Bulletin of the Graduate School.

HORTICULTURE

Office, 118 Horticulture and Forestry Building

PROFESSORS PADDOCK, DAVIS, AND MONTGOMERY, ASSISTANT PROFESSORS ELWOOD AND HOTTES, PROFESSOR TAYLOR (NON-RESIDENT), MR. MOSIER, AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Three lectures and two laboratory hours each week. Required as a prerequisite for all horticultural courses except 118 and courses numerically listed between 151 and 172. Required of all students specializing in horticulture. Credit cannot be received for this course if the student has already passed Horticulture 118. No prerequisite. Mr. Davis.

A study of plant growth with special reference to orchard, garden, greenhouse and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all students majoring in Horticulture. Credit cannot be given for this course if Horticulture 118 has been passed. Prerequisite, Horticulture 101. Mr. Davis.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 101-102. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography, site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106 or equivalent. Mr. Paddock.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticised and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all agricultural students. Not open to students who have credit for Horticulture 101 or 120. Mr. Davis, Mr. Montgomery.

Vegetable gardening, fruit growing and ornamental planting adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 105, 106. Mr. Davis.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Prerequisite, Horticulture 101 and 102. Mr. Montgomery.

A study of the history and development of vegetable gardening, the area and extent of the industry, and the several general factors concerned in the production and utilization of vegetables.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adapta-

tion to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. By-Products. Three credit hours. First semester. Prerequisite, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods of the preservation of surplus garden and orchard products. The theory and art of canning, pickling and preserving, the making of kraut, cider, and vinegar is considered from a commercial standpoint.

FLORICULTURE

141-142. Commercial Floriculture. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101, 132. Mr. Hottes.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. The Flower Shop. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations and house decorations, together with the establishment and management of a flower shop.

144. Conservatory and Bedding Plants. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding. The class will participate in a day excursion.

145. Garden Flowers. Three credit hours. First semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

Discusses general subject of gardening, especially rose, water and rock gardens with attention given to the propagation and growth of garden annual and perennial flowers as adapted to the florist's trade.

146. School Gardens. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 101. Mr. Hottes.

A course designed to promote the efficiency of school and vacant-lot gardens. Involving a study of plans, materials and culture of flowers and vegetables suitable for school-garden work.

147-148. Systematic Floriculture. Three credit hours. The year. Two lectures and two laboratory hours each week. Mr. Hottes.

A study of the origin, history and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

151-152. Plant Materials. Two credit hours. The year. Landscape Architecture, second year. Prerequisite, Botany 101-102. One lecture and two laboratory hours each week. Mr. Elwood.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year. Mr. Elwood.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Open to any student. Recommended for third year students in Floriculture. Mr. Elwood.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body

and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours each week. Landscape Architecture, third year. Prerequisite, Horticulture 154. Mr. Elwood.

This course takes up the general study of practical problems in design, a study of the important works of landscape architecture and the making of finished plans, reports and working-drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Four credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 157-158. Mr. Elwood.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152. Mr. Elwood.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Elwood.

A study of the methods adopted in compiling surveys, especially for landscape use, field practice with instruments.

165. Civic Design. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Elwood.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public squares, street intersections, parks and playgrounds.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Elwood.

This course covers in detail a study of various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162. Mr. Elwood.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective. Mr. Elwood.

172. Proseminary in Landscape. One credit hour. Second semester. Open to fourth-year and graduate students. Mr. Elwood.

Discussion of reports from practical landscape problems.

FOR GRADUATES

201-202. Research Work.

For description of graduate course in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. Mr. Davis.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year. Mr. Davis.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture, 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students. Mr. Elwood.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and steriliza-

tion, soils, temperatures, fertilizers and the general culture of the important greenhouse vegetable crops.

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size and arrangement of garden space, seeds, planting and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

INDUSTRIAL ARTS

(See Shopwork)

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND RASOR, ASSOCIATE PROFESSOR
ARNOLD

107. Mathematics for Students in Agriculture. Three credit hours. Either semester. Mr. Bohannan, Mr. Rasor, Mr. Arnold.

The elements of trigonometry and curve-plotting, numerical computation and algebraic processes germane to agriculture.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Text-book: Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours.. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, 104 Hayes Hall

MAJOR CONVERSE, U. S. A., CAPTAIN TILFORD, U. S. A., LIEUTENANT SHERRARD, U. S. A., SERGEANTS CLARK, ARMSTRONG, PETERS AND MADDEN, MR. BRUDER

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, both special and regular, to drill during two years unless excused by the Military and Gymnasium Board. This work is under three commissioned officers of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

1. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring) military drill; four months, three hours each week (winter) of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of the winter months, at 100, 200 and 300 yards. Lecture, one hour each week by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring), in extended order and guard duty; four months, three hours each week (winter) of class-room instruction in Articles of War,

*Not given in 1917-1918.

guard manual, and field service regulations; target practice at any open hour of the afternoon of the winter months, at 500, 600 and 800 yards.

PHYSICAL EDUCATION

Office, The Gymnasium

PROFESSORS ST. JOHN, WILCE, AND CASTLEMAN, ASSISTANT PROFESSOR NICHOLS, MR. OHLSON, MR. MARSH, MR. TRAUTMAN

MEN

101-102. **Physical Education.** One credit hour. The year. Two hours each week. Required of all first-year students in this college. During the first semester the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

WOMEN

Office, The Gymnasium

ASSISTANT PROFESSOR MEYER, MISS HAMMETT

131-132. **Physical Education.** One credit hour. Four hours each week. Required of all women students during first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium Exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

133-134. **Physical Education.** One credit hour. Four hours each week. Required of all women students. For second-year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE, EARHART, AND BLAKE, MR. HEIL

101. Elementary Physics. Six credit hours. First semester. Mr. Heil.

Recitations and laboratory practice.

Other courses in physics may be elected by four-year students in Agriculture.

103-104. General Physics. Four credit hours. The year. Recitations, lectures and laboratory. A non-mathematical course for students who have no entrance credit in physics. Mr. Earhart.

105-106. General Physics. Four credit hours. The year. Prerequisite, entrance credit in physics. Mr. Blake.

*108. Forestry Physics. Three credit hours. Second semester. Recitations and laboratory practice.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture.

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY

Office, 104 Biological Hall

PROFESSORS BROOKS AND BLEILE, ASSISTANT PROFESSORS SEYMOUR AND McPEEK, MR. DURRANT, MR. REED, AND
DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Reed.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including demonstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

*Not given in 1917-1918.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Physiology 101-102. Mr. Bleile.

A laboratory course with lectures and recitations. The course includes laboratory study of foods, digestion, secretions, excretions and blood with a short period devoted to urinalysis.

PSYCHOLOGY

Office, 403 University Hall

PROFESSOR ARPS, ASSISTANT PROFESSORS PINTNER AND WEISS,
MR. EVANS, MR. CRANE, MR. BRIDGES, MISS GOUDGE, MR.
CULLER, MR. MUDGE, AND DEPARTMENT ASSISTANTS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. All instructors.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

ROMANCE LANGUAGES AND LITERATURES

Office, 305 University Hall

PROFESSORS BOWEN, BRUCE, AND INGRAHAM, ASSISTANT PROFESSORS HAMILTON, CHAPIN, AND PEIRCE, MR. DITCHY,
MR. MOORE, MR. CARDON, MR. DE BERRIZ, AND
DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year. All instructors.

Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition are made to contribute to this end. Sight reading is emphasized.

French 101 is given also during the second semester.

French 102 is given also during the first semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102 or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Peirce, Mr. Ditchy, Mr. Moore, Mr. Cardon.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

French 103 is given also during the second semester.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. Mr. Ingraham, Mr. Hamilton, Mr. Chapin, Mr. Ditchy, Mr. Moore, Mr. De Berriz, and department assistants.

Grammar: Ingraham-Edgren's and Ingraham's *Victoria y Otros Cuentos*. Easy prose and plays. Composition and practice in speaking.

Spanish 101 is given also during the second semester.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Spanish 101-102 or equivalent. Mr. Ingraham, Mr. Hamilton, Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practice in speaking continued.

RURAL ECONOMICS

Office, 209 Hayes Hall

ASSISTANT PROFESSORS J. D. PHILLIPS AND FALCONER, MR. LANTIS

101. Farm Accounting. Two credit hours. Either semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

103. Farm Management. Four credit hours. Either semester. For third and fourth year students. Prerequisite, Economics 101. Mr. Falconer, Mr. Phillips.

Lectures, recitations and laboratory work upon the problems of farm management with special reference to the eco-

conomic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Prerequisite, Economics 101.

Lectures and recitations upon the more important economic problems affecting the farmer. Relation of agriculture to other industries, land tenure, rural finance, the government in relation to the farmer.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Advanced Farm Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or its equivalent, and Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problems of farm organization and operation.

105. Historical and Comparative Agriculture. Two credit hours. First semester. Prerequisites, Rural Economics 103 and 104. Mr. Falconer.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

110. Rural Community Life. Three credit hours. Second semester. Prerequisites, Economics 101 or Sociology 101. Mr. Lantis.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

111. Advanced Farm Management. Two credit hours. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. The class-room work will deal largely with the organization of the factors of production.

113. Rural Economic Organization. Three credit hours. First semester. Prerequisite, Rural Economics 104.

A study of the distribution of agricultural products, organized methods of marketing, and prices. The principles and methods of the various types of co-operation which are adapted to rural conditions in the United States.

***114. Land Tenure.** Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Falconer.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing and operating farm lands.

53. Co-operation in Agriculture. Four credit hours. First term.

Lectures and recitations on the co-operative organizations of agriculture. Co-operative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

*Not given in 1917-1918.

SCHOOL ADMINISTRATION

Office, 100B Hayes Hall

AGRICULTURAL EDUCATION

122. The Teaching of Agriculture in the High School. Two credit hours. Second semester.

The administrative phases of secondary agriculture, the application of the principles of pedagogy to the teaching of agriculture in the high school, and the organization of agricultural materials into secondary courses of study will constitute the essential features. Intended especially for prospective supervisors and teachers of agriculture in high and normal schools. Text-book: Bricker's "The Teaching of Agriculture in the High School."

127. History of Agricultural Education. Two credit hours. First semester.

A survey of the rise and development of agricultural instruction in the United States. The land-grant colleges, the agricultural experiment stations, secondary and elementary school instruction, farmers' institutes, agricultural societies, the club movement, etc. Ohio agricultural educational institutions.

NOTE—For additional courses in Agricultural Education consult the Bulletin of the College of Education, Department of School Administration.

SHOPWORK

Office, 125 Shop Building

PROFESSOR SANBORN, MR. BEEM, MR. FOUST, MR. DENMAN AND
DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Beem, Mr. Denman, Mr. Smith.

Practice in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practice work is directly applicable to country life.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire and tools, practice in iron and steel forging, including such operations as cutting, bend-

ing, drawing, upsetting, shaping and welding iron; the making, hardening and tempering of steel punches, drills and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

SOILS

(See Agricultural Chemistry and Soils)

SPANISH

(See Romance Languages)

SURVEY OF AGRICULTURE

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester. The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common, sporadic and infectious diseases, minor surgery, castration, horseshoeing and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours.
First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours.
Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS OSBURN AND OSBORN, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSORS BARROWS, KRECKER AND METCALF,
MR. KOSTIR, AND DEPARTMENT ASSISTANTS

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osburn, Mr. Barrows, Mr. Kreckler, Mr. Kostir, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

Zoology 101 is given also in the second semester.

121-122. Invertebrate Morphology. Three to five credit hours. The year. Prerequisite, Zoology 101-102. Mr. Kostir.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

129-130. Quantitative Studies in Variation and Heredity. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and one year of another biological science or equivalent. Mr. Barrows.

Studies of the statistical and pure line methods and their application to questions of variation and heredity, including practice in measuring, assembling, and analyzing data, and the

plotting of curves and calculation of coefficients. The pure line method of studying heredity will receive considerable attention, including practice in handling and analysis of Mendelian data.

153-154. Quantitative Studies in Animal Behavior. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Barrows.

Devoted especially to insects. Required in the four-year course in Entomology. Elective to other students.

157-158. Animal Parasitology. Three to five credit hours. The year. Prerequisite, Zoology 101-102, 121-122, or equivalent. Mr. Krecker.

A consideration from the zoological standpoint of the parasitic forms in all animal phyla. In lectures and assigned readings attention will be given to the conditions of parasitic life, the effects upon the host, and origin of parasitism. Laboratory studies of life histories and practice in technique.

159-160. Animal Ecology. Three to five credit hours. The year. One lecture and laboratory periods governed by the number of hours of course scheduled. Prerequisite, Zoology 101-102 and one additional year of a biological science. Mr. Krecker.

A study of animals in their habitats and of the factors involved. Field work, lectures and laboratory.

FOR GRADUATES

201-202. Seminary in Zoology.

223-224. Invertebrate Embryology.

241-242. Research Work.

247-248. Invertebrate Zoology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102. Mr. Metcalf.

A systematic study of groups of insects, with special reference to injurious and beneficial species. A foundation is laid for special study in entomology. Preparation of collections,

essays, life studies, and use of remedial measures, along with laboratory studies on general anatomy.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Elective in junior or senior year. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Metcalf.

Field work and lectures. Studies of life histories, collection, and classification in selected groups, winter condition of insects, insecticides, insecticide machinery, methods of preparing insect illustrations, investigations of selected groups or species, greenhouse pests, etc. Lectures on insect legislation, inspection, quarantine, distribution, natural enemies, special methods of control, etc.

(Entomology 113 and 114 are intended as practical courses in entomological research, adapted especially for those who wish to give special attention to this branch, with reference to future work in agriculture or horticulture, and to furnish a preparation for those who have in view work as entomological investigators in experiment stations or as teachers in agricultural schools.)

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each student of report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Osburn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of selected group or groups of insects.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite, one year of entomology. Mr. Metcalf.

Lectures, reading, field work and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

151-152. Entomology: Insect Control. Three credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, 113-114, or equivalent. Mr. Metcalf.

Technical studies of insect control, utilization of parasitic or predaceous forms. Legislation, quarantine, inspection, insecticides, insecticide machinery, and practical work in fumigation, spraying, etc.

Entomology 151 is not prerequisite to 152.

149. Medical Entomology. Three to five credit hours. First semester. Prerequisites, Zoology 101-102, 121-122, and Entomology 107-108, or equivalents. Mr. Metcalf.

Lectures, demonstrations and recitations upon the insects concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation and health.

FOR GRADUATES

201-202. Seminary in Entomology.

241-242. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

GENERAL INFORMATION

FEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee. The fee for all students is fifteen dollars a semester.

The fee for the short courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars; in Botany and Zoology the fee is two dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform. The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that

second-hand uniforms were unfit to wear and certainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars and twenty-five cents to three dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons at reasonable rates.

Text-books. Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where

boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee	\$30 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposits to cover laboratory materials and breakage	20 00
Uniform, shirt and gloves.....	15 00
Books	15 00
Board—36 weeks at \$3.50 per week.....	126 00
Room rent, at \$8.00 per month.....	72 00
General expenses	100 00
	<hr/>
	\$384 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

Women Students. As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed four dollars a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

AGRICULTURAL EXTENSION

Agricultural Extension was organized to carry instruction from the College of Agriculture to the people living some distance from it. So far this instruction has been given princi-

pally in schools of Agriculture and Home Making, each conducted for one week. The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

Animal Husbandry School. Soil Fertility, Farm Crops, and Animal Husbandry.

Dairy School. Soil Fertility, Farm Crops, and Dairying.

Horticultural School. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

Home-Makers' Course. Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information describing the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus, Ohio.

TIME SCHEDULE

COLLEGE OF AGRICULTURE

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

Key to Abbreviations

Bi.—Biological Building
B. Z.—Botany and Zoology Building
Br.—Brown Hall
Ch.—Chemistry Hall
Ha.—Hayes Hall
H. E.—Home Economics Building
H. F.—Horticulture and Forestry Building
L.—Library
Lo.—Lord Hall
Obs.—Observatory
O.—Orton Hall
P.—Page Hall
Pav.—Judging Pavilion
Ph.—Physics Building
R. L.—Robinson Laboratory
S.—Shop Building
T.—Townshend Hall
U.—University Hall
V. C.—Veterinary Clinic
V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY AND SOILS

AGRICULTURAL CHEMISTRY

Course No.	Hours	Time	Room	Instructor
103—	5	L., M., W., at 8	T. 205	Lyman, Phillips
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205, 204, 200	
		F., at 1	T. 205, 204, 200	
		Lab., M., W., 8 to 11	T. 210	
		Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
		Tu., Th., 1 to 4	T. 210	
107—108	3 to 5	Tu., at 11	T. 205	Lyman
		Lab., to be arranged		
111—112	3 to 5	To be arranged		Lyman
115—	3	L., M., at 11	T. 205	Phillips
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
121—122	3 to 5	L., Th., at 4	T. 205	Lyman
		Lab., to be arranged		
—123	4	L., Tu., at 9	T. 205	Lyman, Phillips
		Tu., at 2	T. 205	
		Q., Th., at 9	T. 205	
		Th., at 2	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
124—	4	L., Tu., at 9	T. 205	Lyman, Phillips
		Tu., at 2	T. 205	
		Q., Th., at 9	T. 205	
		Th., at 2	T. 205	
		Lab., M., W., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
125—126	4	L., Tu., Th., at 10	T. 204	Lyman
		Lab., to be arranged		
201—202	5 to 10	To be arranged	T.	Lyman

For Short Courses Only

51—52	4	L., M., W., F., at 9	T. 205	Salter
		M., W., F., at 2	T. 205	Salter
		Lab., Tu., 8 to 10		
		Tu., 1 to 3		
		Th., 8 to 10		
		Th., 1 to 3		

AGRICULTURAL CHEMISTRY AND SOILS—Continued

SOILS

Course No.	Hours	Time	Room	Instructor
—152	5	L., M., W., at 8	T. 205	Vivian
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205, 204, 200	
		F., at 1	T. 205, 204, 200	
		Lab., M., W., 8 to 11	T. 210	
		Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
		Tu., Th., 1 to 4	T. 210	
153—154	2	Tu., Th., at 9	T. 204	Bear
155—156	3	L., Tu., at 10	T. 205	McClure
		Lab., to be arranged	T.	
157—158	3	M., W., 10; Th., 1 to 4	T. 205	Bear
159—160	1	To be arranged		Bear
201—202	3 to 10	To be arranged	T.	Bear
203—204	1	To be arranged		Bear

For Short Courses Only

53—54	3	M., W., F., at 3	T. 205
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AGRICULTURAL ENGINEERING

101—	4	M., Th., F., at 11	H. E. 321	Ramsower
		Lab., Tu., 1 to 4		
		W., 1 to 4		
		Th., 1 to 4		
		F., 1 to 4		
—101	4	M., W., F., at 4	H. E. 321	Ramsower
		Lab., Tu., 8 to 11		
		W., 8 to 11		
		Th., 8 to 11		
		F., 8 to 11		
103—	3	W., F., 1 to 4	H. E.	Ives
—106	3	Tu., Th., 1 to 4	H. E.	All Instructors
107—	3	Tu., at 8	H. E. 102	McCuen
		Lab., F., 1 to 4; S., 8 to 11		
		Tu., Th., 1 to 4		
—108	3	Tu., Th., at 8;	H. E. 102	Ives
		M., 1 to 4		
—110	2	F., 1 to 4; Sat., 8 to 11	H. E.	McCuen
111—112	2 to 5	To be arranged		
—114	2	W., F., 1 to 4		Ives

For Short Courses Only

51—	4	Tu., Th., at 9	H. E. 102	Ives
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AGRICULTURAL ENGINEERING—Continued

Course No.	Hours	Time	Room	Instructor
		Lab., F., 1 to 4		
		M., 1 to 4		
—51	4	Tu., Th., at 3	H. E. 321	Ives
		Lab., W., 8 to 11		
		F., 8 to 11		
52—52	4	Tu., Th., at 2	H. E. 102	Ramsower
		Lab., Th., F., 8 to 10		
		M., Tu., 8 to 10		
53—	3	M., F., at 10	H. E. 102	Ives
		M., 1 to 4		
		S., 8 to 11		
—54	4	M., W., F., at 10	H. E. 102	McCuen
		Tu., 1 to 4		
		W., 1 to 4		
		Th., 1 to 4		

AGRICULTURAL EXTENSION

—102	2	To be arranged	Wheeler
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AMERICAN HISTORY

101—102	3	M., W., F., at 8	U. 205	Hockett
		M., W., F., at 8	U. 209	Schlesinger
		M., W., F., at 8	L. 107	Wittke
		M., W., F., at 9	U. 205	Hockett
		M., W., F., at 9	L. 107	Wood
		M., W., F., at 10	U. 209	Schlesinger
		M., W., F., at 10	L. 107	Wittke
		M., W., F., at 1	U. 205	Schlesinger
		M., W., F., at 1	U. 209	Wood
		M., W., F., at 1	L. 107	Wittke
		M., W., F., at 3	U. 205	Wood
		M., W., F., at 4	U. 205	Wood
101—	3	M., W., F., at 3	U. 209	Wittke
—101	3	M., W., F., at 3	U. 209	Wittke
102—101	3	M., W., F., at 2	U. 209	Wittke

ANATOMY

101—102	3 to 5	L., W., at 1	Bio. 102	Baker
		Lab., W., Th., F., 1 to 4		
—102 (pre-med)		L., Tu., at 8	Bio. 100	Landacre
		Th., at 1	Bio. 102	Baker
		Lab., Tu., 9 to 11		
		Th., 8 to 11		
		Tu., 1 to 4		

ANATOMY—Continued

Course No.	Hours	Time	Room	Instructor
		Th., 2 to 4		
		For 5 hrs., credit F., 1 to 4 additional		
103—104	3 to 5	L., Tu., at 1 Lab., W., Th., F., 1 to 4	Bio. 107	Landacre
105—106	3 to 5	To be arranged	Bio. 102	Baker

ANIMAL HUSBANDRY

101—102	4	M., W., F., at 9 M., W., F., at 3 Lab., Tu., 8 to 10 Th., 8 to 10 M., 1 to 3 W., 1 to 3	Pav.	Salisbury, Stone
103—104	4	M., W., F., at 10 Lab., Tu., 1 to 3	Pav.	Kays, Coffey
105—	3	M., W., F., at 9 M., W., F., at 3	Pav. Pav.	Plumb
—106	4	M., W., F., at 9 Lab., W., 1 to 3 F., 1 to 3	Pav.	Kays
107—	4	Th., F., 1 to 4	Pav.	Kays
—108	4	M., Th., F., at 11 Lab., Tu., 1 to 3 W., 1 to 3 F., 1 to 3	Pav.	Coffey
109—	2	Tu., Th., at 9	Pav.	Kays
—110	4	M., W., F., at 9 M., 1 to 3	Pav.	Plumb
112—	3	M., Th., F., at 11	Pav.	Plumb
—116	4	M., W., F., at 8 Lab., Th., 1 to 3	Pav.	Salisbury
117—118	3	Tu., Th., at 8 Lab., Th., 1 to 3 F., 1 to 3	Pav.	Jacoby
119—	2	M., W., at 9	Pav.	Jacoby
—120	1	To be arranged	Pav.	Jacoby
—121	1	F., at 11	Pav.	Jacoby
—122	1	To be arranged	Pav.	Jacoby
—124	2	M., W., 1 to 3	Pav.	Jacoby
—126	3	M., Th., F., at 11	Pav.	Plumb
—132	3	Tu., Th., at 3 Lab., Th., 1 to 3		Kays
133—	3	Tu., Th., at 2; F., at 1	Pav.	
201—202		To be arranged		Plumb

ANIMAL HUSBANDRY—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
51—52	4	M., W., F., at 8	Pav.	Coffey, Stone
		M., W., F., at 3	Pav.	Coffey, Stone
		Lab., Tu., 8 to 10		
		Tu., 1 to 3		
		Th., 8 to 10		
53—	4	Th., 1 to 3		
		M., W., F., at 10	Pav.	Salisbury
54—54	4	Lab., M., 1 to 3		
		M., Tu., Th., F., at 10	Pav.	Stone
—56	4	M., W., F., at 9	Pav.	Kays
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
57—	4	M., W., F., at 9	Pav.	Coffey
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
59—60	3	Tu., Th., at 10	Pav.	Jacoby
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
		F., 1 to 3		

ARCHITECTURE

111—	2	W., Th., 1 to 4	Br. 1	Haskett
		F., S., 8 to 11	Br. 1	Haskett
—111	2	M., Tu., 1 to 4	Br. 1	Haskett
		Th., F., 1 to 4	Br. 1	Haskett
113—	2	Tu., Th., at 2	Br. 104	Chubb
131—132	2	M., W., 8 to 11	Br. 103	
		W., F., 1 to 4	Br. 103	
133—	3	M., W., F., at 2	Br. 109	
—136	3	M., W., F., at 3	Br. 104	

ART

117—	3	To be arranged	Ha.	Robinson
119—	1	F., at 8	Ha. 204	Kelley
—119	1	F., at 1	Ha. 204	Kelley
121—	2	Tu., Th., 9 to 11	Ha. 303	Shepherd
—121	2	Tu., Th., 1 to 3	Ha. 303	Shepherd
131—	2	M., W., 8 to 10	Ha. 303	Shepherd
		M., W., 1 to 3	Ha. 303	Norris
		Tu., Th., 8 to 10	Ha. 303	Christensen,
				Norris
		Tu., Th., 1 to 3	Ha. 303	Robinson,
				Shepherd

ART—Continued

Course No.	Hours	Time	Room	Instructor
—131	2	Tu., Th., 8 to 10	Ha. 303	Norris
132—	2	M., W., 1 to 3	Ha. 303	Kelley
—132	2	Tu., Th., 8 to 10	Ha. 303	Robinson
		M., W., 9 to 11	Ha. 303	Norris
133—	2	M., W., 9 to 11	Ha. 303	Norris
		W., F., 9 to 11	Ha. 303	Robinson
—133	2	Tu., Th., 2 to 4	Ha. 303	Robinson
134—134	3	Tu., Th., 8 to 11	Ha. 303	Kelley
135—135	4	Tu., Th., 1 to 4	Ha. 303	Norris
136—	2	Tu., Th., 9 to 11	Ha. 303	Shepherd
—136	2	M., W., 9 to 11	Ha. 303	Shepherd
		Tu., Th., 9 to 11	Ha. 303	Shepherd
—137	3	M., W., 8 to 11	Ha. 303	Shepherd
138—	3	To be arranged	Ha.	Kelley
—139	3	To be arranged	Ha.	Robinson
141—	2	Tu., Th., at 10	Ha. 204	Robinson
—141	2	Tu., Th., at 8	Ha. 204	Shepherd
		Tu., Th., at 10	Ha. 204	Kelley
		Tu., Th., at 1	Ha. 204	Robinson
		Tu., Th., at 3	Ha. 204	Kelley
142—	3	M., W., 8 to 10	Ha. 303	Robinson
—142	3	M., W., 8 to 10	Ha. 303	Robinson

BACTERIOLOGY

—102	2	L., Th., at 8	V. L. 8	Froning
		Lab., Th., 1 to 4	V. L. 201	Froning
107—	4 or 5	L., M., W., at 8	V. L. 101	Morrey
		M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 101	Morrey
		Lab., Tu., Th., 8 to 11	V. L. 205	Froning
				McCoy
		Tu., Th., 1 to 4	V. L. 205	Froning
				McCoy
		M., W., 8 to 11	V. L. 201	Froning
			205	McCoy
		M., W., 1 to 4	V. L. 201	Froning
			205	McCoy
		M., 1 to 4; S., 8 to 11	V. L. 201	Froning
			205	McCoy
—108	2 to 5	L., M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 101	Morrey
		Lab., M., W., 8 to 11	V. L. 201	Froning
			205	McCoy
		M., W., 1 to 4	V. L. 201	Froning
			205	McCoy
		M., 1 to 4; S., 8 to 11	V. L. 201	Froning
			205	McCoy

BACTERIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
—110	2 to 5	L., Tu., Th., at 9 Lab., to be arranged	V. L. 102	Morrey Morrey McCoy
—112	2 to 5	L., Tu., Th., at 10 Lab., to be arranged	V. L. 102	Morrey Morrey McCoy
—114	2 to 5	L., Tu., Th., at 11 Lab., to be arranged	V. L. 102	Morrey Morrey McCoy
—116	2 to 5	L., M., W., at 8 Lab., to be arranged	V. L. 102	Morrey
117—	2 to 5	L., W., at 11; F., at 1 Lab., M., 1 to 4; F., 2 to 5	V. L. 102 V. L. 8	Starin Starin
—118	2 to 5	L., M., at 2; F., at 1 Lab., W., 1 to 4; F., 2 to 5	V. L. 102 V. L. 8	Starin Starin
119—120	2 to 5	L., M., F., at 11 Lab., to be arranged	V. L. 102	Starin Starin
121—122	3 to 5	To be arranged		Morrey
123—124	3 to 5	To be arranged		Morrey
125—126	3 to 5	To be arranged		Morrey Starin Froning McCoy
131—	4	L., M., F., at 10 Lab., W., Sat., 8 to 11	V. L. 102 V. L. 8	Morrey Starin
—132	4	L., M., Th., at 9 Lab., W., F., 8 to 11	V. L. 102 101 V. L. 8	Starin Starin

For Short Courses Only

51—	4	To be arranged	V. L.	Morrey
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BIBLICAL LITERATURE

101—102	3	M., Th., F., at 11	O. 5	Breyfogle
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BIBLIOGRAPHY

103—	½	Th., at 3 F., at 11	Li. 107 Li. 107	Reeder Reeder
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BOTANY

101—102	4	L., Tu., at 9 Tu., at 2 Th., at 9 Th., at 2	B. Z. 100 B. Z. 100 B. Z. 100 B. Z. 100	Schaffner Detmers Stover Griggs
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BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
		Quiz., Tu., Th., at 8	B. Z. 208	Stover
			B. Z. 110	Detmers
		Tu., Th., at 10	B. Z. 208	Stover
			B. Z. 110	Detmers
			B. Z. 100	Sears
		Tu., Th., at 1	B. Z. 208	Griggs
			B. Z. 110	Detmers
			B. Z. 100	Sears
		Tu., Th., at 3	B. Z. 208	Griggs
			B. Z. 110	Detmers
			B. Z. 209	Sears
		Lab., M., 8 to 11	B. Z. 108	Detmers
		M., 1 to 4	B. Z. 62	Stover
		Tu., 8 to 11	B. Z. 108	
		Tu., 1 to 4	B. Z. 108	
		Th., 8 to 11	B. Z. 108	
		Th., 1 to 4	B. Z. 108	
		F., 8 to 11	B. Z. 108	Detmers
			B. Z. 62	Sears
		F., 1 to 4	B. Z. 108	Detmers
			B. Z. 62	Sears
107—	2	To be arranged	B. Z. 108	Detmers
110—	2	W., 1 to 4	B. Z. 108	
			110	Sears
113—	3	L., W., at 10	B. Z. 208	Stover
		Lab., M. F., 10 to 12	B. Z. 206	
—116	3	L., M., W., at 10	B. Z. 208	Stover
		Lab., F., 10 to 12	B. Z. 206	
117—118	3	L., Tu., at 9	B. Z. 110	Transeau
		Lab., W., 1 to 5	B. Z. 66	
—120	3	Sat. and Mon. arranged	B. Z. 210	Griggs
121—	3	L., W., at 1	B. Z. 110	Schaffner
		Lab., W., 2 to 4	B. Z. 62	
125—126	4	L., Tu., Th., at 8	B. Z. 109	Transeau
		Lab., Tu., Th., 1 to 3	B. Z. 112	
		Tu., Th., 3 to 5	B. Z. 112	
127—128	4	L., Tu., Th., at 11	B. Z. 110	Griggs
		Lab., Tu., Th., 8 to 10	B. Z. 210	
129—130	3 to 5	M., 1 to 4; other hours arranged	B. Z. 60	Schaffner
131—132	3 to 5	To be arranged	B. Z. 60	Schaffner
133—134	3 to 5	To be arranged		Schaffner, Transeau, Griggs, Detmers, Stover
135—136	1	Tu., at 4	B. Z. 110	Schaffner
137—138	1	M., at 4	B. Z. 110	Schaffner

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
139—140	3 to 5	To be arranged	B. Z. 210	Stover
—142	2	Th., 1 to 4	B. Z. 62	Schaffner
143—144	3	M., W., 8 to 12	B. Z. 210	Griggs
145—146	2	M., 1 to 4	B. Z. 108	Detmers
—150	3	M., at 9; W., 9 to 11	B. Z. 110, 112	Transeau
201—202	3 to 10	To be arranged	B. Z. 104	Schaffner Griggs
203—204	4 to 10	To be arranged	B. Z. 104	Schaffner Griggs
205—206	4 to 10	To be arranged	B. Z. 112	Transeau
207—208	3 to 10	To be arranged	B. Z. 210	Griggs, Stover
209—210	1	To be arranged		Schaffner

For Short Courses Only

91—	4	M., W., at 8 Lab., Tu., Th., 1 to 3	B. Z. 208 B. Z. 206	Stover
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CHEMISTRY

105—106	4	L., M., at 8 W., at 9 M., at 1 W., at 2 Q., W., at 8 F., at 8 F., at 9 W., at 1 F., at 1 F., at 2 Lab., M., W., 8 to 11 Tu., Th., 8 to 11 F., S., 8 to 11 M., W., 1 to 4 Tu., Th., 1 to 4	Ch. 200 Ch. 200 Ch. 200 Ch. 200 Ch. 101, 302 Ch. 302 Ch. 101, 302 Ch. 101, 302 Ch. 101, 302 Ch. 101, 302 Ch. 101, 302	Evans and Department Assistants
—105	4	To be arranged		
109—110	4	L., F., at 10 F., at 3 Q., M., at 10 M., at 3 W., at 10 W., at 3 Lab., M., W., 8 to 11 Tu., Th., 8 to 11 F., S., 8 to 11	Ch. 200 Ch. 200 Ch. 207 Ch. 101, 302 Ch. 101, 207 Ch. 101, 302	Evans and Department Assistants

CHEMISTRY—Continued

Course No.	Hours	Time	Room	Instructor
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
—109	4	To be arranged		
113—114	2	Tu., Th., at 1	Ch. 200	Henderson
117—	3	To be arranged		Olin
119—120	4	L., F., at 10	Ch. 207	Foulk
		L., M., at 3	Ch. 200	Foulk
		Lab. open mornings and afternoons		
121—	4	L., M., at 3	Ch. 207	Foulk
		Lab., Tu., W., 1 to 4		
—124	1	Th., at 3	Ch. 200	Foulk
127—	4	M., Tu., Th., F., at 11	Ch. 200	Boord
—132	2	Tu., at 11; F., at 4	Ch. 101	McPherson
—136	2	Tu., Th., at 11	Ch. 207	Foulk
150—	3	Tu., Th., at 9; S., at 11	Ch. 101	Evans
	5	Tu., Th., at 9; S., at 11		Evans
		Lab. arranged		
151—152	2	Tu., Th., at 8	Ch. 200	McPherson
153—154	2 or 3	Laboratory open in after- noons		McPherson, Boord

CIVIL ENGINEERING

131—132	5	M., W., F., at 10; M., Tu., 1 to 4	Br. 1	Neilson, Faehnle
133—	1	Tu., at 8		Eno

DAIRYING

101—	4	M., W., F., at 10	T. 200	Erf
		Lab., Tu., 1 to 4	T. 3, 5, 10	
		F., 1 to 4	T. 3, 5, 10	
		M., W., F., at 3	T. 200	Erf
		Lab., Tu., 8 to 11	T. 3, 5, 10	
		F., 8 to 11	T. 3, 5, 10	
—101	4	M., W., F., at 9	T. 200	Erf
		Lab., Tu., 1 to 4	T. 3, 5, 10	
		F., 1 to 4	T. 3, 5, 10	
		M., W., F., at 2	T. 200	Erf
		Lab., Tu., 8 to 11	T. 3, 5, 10	
		F., 8 to 11	T. 3, 5, 10	
—102	4	M., W., F., at 10	T. 200	Erf
		Lab., Th., 1 to 4	T. 3, 5, 10	
		M., W., F., at 3	T. 200	
		Lab., Tu., 8 to 11	T. 3, 5, 10	
103—103	2 to 4	Tu., at 11	T. 200	Cunningham

DAIRYING—Continued

Course No.	Hours	Time	Room	Instructor
		Lab., M., 1 to 4 Th., 8 to 11	T. 3, 5, 10	
—104	2	To be arranged		
105—105	2 or 4	M., W., at 11 Lab., M., or Th., 2 to 5 Tu., or F., 8 to 10	T. 200	Clevenger
107—107	3	Tu., at 4 Lab., M., 1 to 5 W., 1 to 5	T. 200 T. 3, 5, 10	Stoltz
110—110	2	F., at 11; Sat., 8 to 12	T. 200	Cunningham
111—111	2	F., at 11 Lab., to be arranged	T. 109	Clevenger
113—114	2	To be arranged		Erf
115—	2	M., W., at 11	T. 109	Erf
—116	2	M., at 11 Lab., to be arranged	T. 109	Erf
119—120	1	To be arranged		
121—121	9	To be arranged		Erf
201—202	5 to 10	To be arranged		Erf

For Short Courses Only

52—	3	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	T. 200	Cunningham
—52	3	Tu., Th., at 9 Lab., M., 1 to 4 F., 1 to 4	T. 200	Cunningham
53—53	3	Tu., Th., at 3 Lab., W., 8 to 11 Th., 8 to 11	T. 109	Erf, Stoltz
55—	3	To be arranged		Stoltz
—56	3	To be arranged		Clevenger
57—58	3	To be arranged		Erf

ECONOMICS AND SOCIOLOGY

ECONOMICS

101—102	3	M., W., F., at 8 M., W., F., at 8 M., W., F., at 8 M., W., F., at 9 M., W., F., at 9 M., W., F., at 9 M., W., F., at 9 M., W., F., at 10 M., W., F., at 10 M., W., F., at 10	P. 12 P. 13 P. 9 P. 12 P. 13 P. 9 Ha. 205 P. 12 P. 13 P. 9	Bice Drury Lockhart Ruggles Bice Hammond Drury Gephart
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ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		M., Th., F., at 11	P. 12	
		M., Th., F., at 11	P. 13	
		M., W., F., at 1	P. 12	Gephart
		M., W., F., at 1	P. 13	Drury
		M., W., F., at 2	P. 12	Parry
		M., W., F., at 2	P. 13	Drury
		M., W., F., at 3	P. 12	Gephart
		M., W., F., at 3	P. 13	
		M., W., F., at 4	P. 12	Coon
		M., W., F., at 4	P. 10	
102—101	3	M., W., F., at 8	Ha. 205	
		M., W., F., at 3	P. 9	Walradt
119—120	3	M., W., F., at 2	P. 9	Mark
139—	3	L., Tu., Th., at 8	P. 10	
		Tu., Th., at 9	P. 10	
		Tu., Th., at 9	P. 7	
		Tu., Th., at 10	P. 10	
		Tu., Th., at 1	P. 10	
		Tu., Th., at 1	P. 7	
		Tu., Th., at 2	P. 10	
		Tu., Th., at 3	P. 10	
		Lab., M., 8 to 10	P. 11	
		Tu., 10 to 12	P. 11	
		W., 8 to 10	P. 11	
		F., 8 to 10	P. 11	
		M., 1 to 3	P. 11	
		Tu., 1 to 3	P. 11	
		W., 1 to 3	P. 11	
		F., 1 to 3	P. 11	
—139	3	Tu., Th., at 1; Th., 8 to 10	P. 6, 11	
147—148	2	Tu., Th., at 1	P. 13	Walradt
171—	3	Tu., Th., at 1	P. 6	
		Lab., Th., 8 to 10	P. 11	
—171	3	Tu., Th., at 8	P. 10	
		Tu., Th., at 9	P. 7	
		Tu., Th., at 10	P. 10	
		Tu., Th., at 1	P. 10	
		Tu., Th., at 1	P. 7	
		Tu., Th., at 2	P. 10	
		Tu., Th., at 3	P. 10	
		Lab., M., 8 to 10	P. 11	
		Tu., 10 to 12	P. 11	
		W., 8 to 10	P. 11	
		F., 8 to 10	P. 11	
		M., 1 to 3	P. 11	
		Tu., 1 to 3	P. 11	
		W., 1 to 3	P. 11	
		F., 1 to 3	P. 11	

ECONOMICS AND SOCIOLOGY—Continued

SOCIOLOGY

Course No.	Hours	Time	Room	Instructor
101—102	3	M., W., F., at 8	P. 6	North
		M., W., F., at 8	P. 10	Drury
		M., W., F., at 9	O. 105	Bruder
		M., W., F., at 9	Ha. 200	North
		M., W., F., at 10	P. 6	
		M., W., F., at 10	O. 5	Bruder
		M., Tu., F., at 11	P. 7	
		M., W., F., at 1	P. 7	Mark
		M., W., F., at 2	P. 10	McKenzie
		M., W., F., at 3	P. 10	Bice
		M., W., F., at 4	P. 9	McKenzie
102—101	3	M., W., F., at 3	P. 101	
107—	3	M., W., F., at 2	L. 107	McKenzie

ENGINEERING DRAWING

101—	2	M., W., 8 to 10	Br. 203, Ha. 301	All Instructors
		M., W., 1 to 3	Br. 203, 200	
		Tu., Th., 8 to 10	Ha. 301	
		Tu., Th., 1 to 3	Br. 203, 200	
		F., S., 8 to 10	Br. 104, Ha. 301	
—101	2	F., S., 8 to 10		
102—	3	M., at 8	Br. 200	
		M., 9 to 11; Tu., 8 to 10		
—102	3	L., M., at 2	Br. 203, 1	All Instructors
		M., at 9	Br. 203	
		W., at 10	Br. 203, 200	
		W., at 3	Br. 203	
		F., at 8	Br. 203, 200	
		F., at 10	Br. 200, 104	
		F., at 1	Br. 203, 200	
		F., at 2	Br. 104, 200, 1	
		F., at 3	Br. 203	
		Lab., M., W., 8 to 10	Br.	
		M., W., 1 to 3	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		F., S., 8 to 10	Br.	
108—	3	Tu., Th., at 8; Th., 1 to 4	Br. 200	French
125—125	2	L., Tu., at 1	Ha. 301, Br. 104	French
		Th., at 9	Br. 104	Meiklejohn
		Th., at 1	Br. 104	Withrow

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
		F., at 10	Br. 203	Batesole
		Lab., W., 8 to 11	Br.	
		W., 1 to 4	Br.	
		F., 8 to 11	Br.	
		F., 1 to 4	Br.	
127—	1½	Sat., 8 to 11	Br. 203	French
				Turnbull
—128	1½	Sat., 8 to 11	Br. 203	French

ENGLISH

101—104	2	M., W., at 10	Ph. 5	
		M., W., at 2	Ph. 304	
		Tu., Th., at 8	Ph. 202, 104,	
			204, 302	
		Tu., Th., at 9	Ph. 202, 104,	
			102, P. 109	
		Tu., Th., at 10	U. 312	
			P. 7, P. 12	
		Tu., Th., at 1	Ph. 202, 104	
			P. 12	
104—101	2	Tu., Th., at 2	Ph. 202, 104,	
			P. 9, P. 13	
		Tu., Th., at 3	Ph. 202, 104,	
			302, 204	
			Ph. 102	
105—106	2	Tu., Th., at 8	Ph. 102	
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 4	Ph. 102	
133—133	3	Tu., Th., at 10	Ph. 104	Beck
141—	3	M., W., F., at 10	Ph. 102	Taylor
		M., W., F., at 3	Ph. 302	Andrews
		M., W., F., at 9	Ph. 102	Taylor
		M., W., F., at 10	Ph. 304	Cooper
		M., W., F., at 1	Ph. 102	Andrews
145—	3	M., W., F., at 2	Ph. 303	Percival
		M., W., F., at 8	Ph. 204	Graves
		M., W., F., at 10	Ph. 204	Beck
		M., W., F., at 2	Ph. 104	Cooper
		M., W., F., at 3	Ph. 102	Percival

For Short Courses Only

91—92	2	Tu., Th., at 8	Ph. 5	Dishong
		Tu., Th., at 10	Ph. 5	Dishong
		Tu., Th., at 2	Ph. 5	Dishong
		Tu., Th., at 3	Ph. 5	Dishong

ENGLISH—Continued**PUBLIC SPEAKING**

Course No.	Hours	Time	Room	Instructor
101—	2	Tu., Th., at 9	Ph. 204	Lindsley
101—102	2	Tu., Th., at 8	Ph. 304	Lindsley
		Tu., Th., at 10	Ph. 304	Ketcham
		Tu., Th., at 10	Ha. 200	Lindsley
		M., W., at 1	Ph. 304	Lindsley
		Tu., Th., at 1	Ph. 204	Ketcham
		M., W., at 2	Ph. 204	Lindsley
		M., W., at 3	Ph. 204	Lindsley

EUROPEAN HISTORY

101—102	3	M., W., F., at 8	U. 201	All Instructors
		M., W., F., at 8	U. 316	
		M., W., F., at 9	U. 201	
		M., W., F., at 10	U. 201	
		M., W., F., at 1	U. 201	
		M., W., F., at 1	U. 202	
		M., W., F., at 2	U. 201	
		M., W., F., at 3	U. 201	
		M., W., F., at 4	U. 201	

FARM CROPS

101—	4	M., W., F., at 4	H. F. 108	Wiggans
		Lab., Tu., 8 to 10	H. F.	
		Th., 8 to 10	H. F.	
—101	4	M., W., F., at 11	H. F. 108	Wiggans
		Lab., Tu., 1 to 3	H. F.	
		Th., 1 to 3	H. F.	
109—	3	Tu., Th., at 10;	H. F. 108	Wiggans
		M., 1 to 3	H. F.	
—111	3	Tu., Th., at 10	H. F. 108	Wiggans
		M., 1 to 3	H. F.	
—113	3	Tu., Th., at 9; W., 1 to 4	H. F. 113	Park
119—120	2 to 4	To be arranged		Park, Wiggans
201—202	5 to 10	To be arranged		Park, Wiggans
203—204	1	To be arranged		Park

For Short Courses Only

51—52	4	M., W., F., at 2	H. F. 108
		Lab., M., 8 to 10	
		Tu., 8 to 10	
		W., 8 to 10	
		F., 8 to 10	

FORESTRY

Course No.	Hours	Time	Room	Instructor
101—102	2	Tu., Th., at 8	H. F. 107	Scherer
—104	3	Tu., Th., at 8; Th., 1 to 4	H. F. 108	DuBois
105—	3	M., W., at 9; M., 1 to 4	H. F. 108	Scherer
—106	3	M., W., at 9; M., 1 to 4	H. F. 108	Scherer
107—	4	M., W., F., at 10	H. F. 108	Pfleuger, DuBois
		Lab., F., 1 to 4	H. F.	
111—112	2	Tu., Th., at 9	H. F. 108	Scherer, Pfleuger
113—114	2	Tu., Th., at 10	H. F. 205	Scherer
115—	2	W., 1 to 5	H. F.	Scherer
—116	4	M., W., F., at 10	H. F. 108	Scherer
		Lab., W., 1 to 4		
117—118	1	F., at 11	H. F. 205	
119—120	3 to 5	To be arranged	H. F.	Scherer, Pfleuger
121—122	3	M., W., at 9; Tu., 1 to 4	H. F. 205	Pfleuger
123—	4	M., W., F., at 8	H. F. 205	Pfleuger
		Lab., Th., 1 to 4		
—124	2	Tu., Th., at 10	H. F. 113	Pfleuger
125—	3	M., W., at 10	H. F. 205	Scherer
		F., 1 to 4		
—126	3	M., W., at 8	H. F. 205	Scherer
		Lab., Th., 1 to 4		
127—	2	To be arranged	H. F.	Scherer
—128	3	M., W., at 10; F., 1 to 4	H. F. 205	Pfleuger, DuBois

For Short Courses Only

51—	4	M., W., F., at 8	H. F. 108	Scherer
		Lab., to be arranged		

GEOLOGY

103—	3	M., W., F., at 10	O. 105	Bownocker
—104	3	M., W., F., at 10	O. 105	Carman
105—	3 to 5	To be arranged; field trips Saturday		Carman
—106	3	To be arranged; field trips Saturday		Hills
107—108	2 to 5	To be arranged		Carman
151—151	Agr. 3	L., Tu., Th., at 8	O. 105, 2nd sem. 5	Verwiebe
		Tu., Th., at 9	O. 105	
		Tu., Th., at 10	O. 5, 2nd sem. 105	

GEOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., at 1		
			O. 105, 2nd sem. 5	Verwiebe
		Tu., Th., at 2	O. 105	Verwiebe
		Tu., Th., at 3	O. 105	Cottingham
		Lab., W., 8 to 10	O.	Verwiebe
		W., 1 to 3	O.	Verwiebe
		F., 8 to 10	O.	Verwiebe
		F., 10 to 12	O.	Cottingham
		F., 1 to 3	O.	Verwiebe
—162	4	M., W., F., at 9	O. 202	
167—	3	M., W., F., at 8	O. 105	Bownocker

GERMAN

101—102	4	M., Tu., W., Th., at 8	U. 320	All Instructors
		M., Tu., W., Th., at 8	H. F. 106	
		M., Tu., W., Th., at 9	U. 320	
		M., Tu., W., Th., at 10	U. 320	
		M., Tu., W., Th., at 1	U. 320	
		M., Tu., W., Th., at 2	U. 320	
		M., Tu., W., Th., at 3	U. 320	
—101	4	M., Tu., W., Th., at 4	H. F. 106	Reese
102—103	4	M., Tu., W., Th., at 4	U. 320	Bussey
103—104	4	M., Tu., W., Th., at 8	U. 319	All Instructors
		M., Tu., W., Th., at 9	U. 319	
		M., Tu., W., Th., at 9	Br. 1	
		M., Tu., W., Th., at 10	U. 319	
		M., Tu., W., Th., at 1	U. 319	
		M., Tu., W., Th., at 2	U. 319	
		M., Tu., W., Th., at 3	H. F. 107	
103—106	4	M., Tu., W., Th., at 10	H. F. 106	
		M., Tu., W., Th., at 1	H. F. 106	
		M., Tu., W., Th., at 4	U. 319	
104—	4	M., Tu., W., Th., at 4	H. F. 106	Reese

HISTORY AND PHILOSOPHY OF EDUCATION

101—102	3	M., W., F., at 10	Ha. 101	Anderson
		M., W., F., at 4	Ha. 101	Anderson

HOME ECONOMICS

101—102	5	L., M., W., at 9	H. E. 203	White
		M., W., at 2	H. E. 102	White
		Q., Th., at 10	H. E. 102	White
		F., at 8	H. E. 102	White

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
		F., at 10	H. E. 321	White
		F., at 1	H. E. 102	White
		Lab., M., W., 1 to 3	H. E.	
		M., W., 9 to 11; 2nd sem., Tu., F., 10 to 12		
		Tu., Th., 8 to 10		
		Tu., Th., 1 to 3; 2nd sem., Tu., Th., 3 to 5		
104—	3	M., W., F., at 10	H. E. 203	Linder
—104	3	M., W., F., at 10	H. E. 203	Linder
		M., W., F., at 2	H. E. 203	
105—106	2 to 5	Th., at 2	H. E. 321	Van Meter
		Lab. to be arranged	H. E. 301, 302	
—108	2	Tu., Th., at 9	H. E. 102	Van Meter, Hathaway, Adams
110—	4	Tu., Th., at 8	H. E. 203	Skinner
		Lab., M., W., 11 to 1	H. E. 204	
—110	4	Tu., Th., at 8	H. E. 203	Skinner
		Tu., Th., at 1	H. E. 203	Skinner
		Lab., Tu., F., 10 to 12	H. E. 204	
		M., W., 11 to 1	H. E. 204	
111—112	2	L., M., at 9	H.E. 218, 321	Walker
		M., at 2	H.E. 218, 321	Tucker
		Tu., at 8	H.E. 218, 321	Walker
		Tu., at 2	H.E. 218, 321	Walker
		Th., at 9	H.E. 218, 321	Walker
		Th., at 1	H.E. 218, 321	Walker
		Lab., Tu., 9 to 11	H.E. 215, 216, 217	
		W., 8 to 10		
		W., 1 to 3		
		Th., 2 to 4		
		F., 8 to 10		
		F., 1 to 3		
113—	3	L., Th., at 11	H. E. 102	Hathaway
		Th., at 10	H. E. 203	Hathaway
		Lab., Tu., F., 10 to 12	H. E. 113, 114	
		Tu., Th., 1 to 3		
		M., W., 1 to 3		
—113	3	L., Th., at 11	H. E. 102	Hathaway
		Tu., F., 10 to 12	H. E. 113, 114	
—116	3	Th., at 10	H. E. 203	Hathaway
		M., W., 1 to 3	H. E. 113	
		M., W., 8 to 10	H. E. 113, 114	
118—118	3	Th., at 10; Tu., 10 to 12; F., 1 to 3	H. E. 218, 211	Tucker

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
		F., at 9; Tu., Th., 3 to 5	H. E. 218, 211	Tucker
119—	3	M., Th., at 11; F., 10 to 12	H. E. 218	Walker
		M., W., at 3; F., 2 to 4	H. E. 218	Walker
—119	3	M., Th., at 11; F., 10 to 12	H. E. 218	Walker
121—	3	M., at 10	H. E. 218	Linder, Skinner
		Lab., Tu., Th., 8 to 10	H. E. 302	
		M., W., 2 to 4	H. E. 302	
123—124	2	Tu., at 2; Lab., to be arranged	H. E. 203	Adams
125—126	3	To be arranged	H. E.	White
201—202	2 to 5	To be arranged	H. E.	White

HORTICULTURE

101—	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	Davis
103—104	4	M., W., F., at 8 Lab., M., 2 to 4 W., 2 to 4	H. F. 113	Montgomery
105—106	4	M., W., F., at 9 Lab., M., 1 to 3	H. F. 112	Paddock
107—	3	M., W., F., at 10	H. F. 112	Paddock
109—110	3	Tu., at 11 Lab., to be arranged	H. F. 113	Paddock
—118	4	L., M., W., F., at 10 M., W., F., at 2 Lab., Th., 8 to 10 F., 2 to 4	H. F. 206 H. F. 206	Paddock Davis
—120	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	Davis
121—122	4	M., Th., F., at 11 Lab., M., 2 to 4	H. F. 113	Davis
131—132	4	M., W., F., at 9 Lab., F., 2 to 4	H. F. 113	Montgomery
133—	3	Tu., at 9; Tu., 1 to 5	H. F. 113	Montgomery
141—142	4	M., W., F., at 8 Th., 1 to 4	H. F. 112	Hottes
—143	3	Tu., Th., at 8 Lab., Tu., 1 to 3	H. F.	Hottes
—144	3	Tu., Th., at 9; M., 1 to 3	H. F. 112	Hottes
145—	3	Tu., Th., at 9; F., 1 to 3	H. F. 112	Hottes
—146	3	M., W., at 10 F., 1 to 3	H. F. 112	Hottes

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
147—148	3	To be arranged	H. F.	Hottes
151—152	2	Tu., at 10	H. F.	Elwood
		Sat., 9 to 12		
—154	3	M., W., F., at 10	H. F.	Elwood
—156	2	M., W., at 8	H. F. 204	Elwood
157—158	3	M., at 11	H. F.	Elwood
		Tu., Th., 1 to 3		
159—160	4	To be arranged	H. F.	Elwood
—162	4	W., at 11	H. F.	Elwood
		Lab., to be arranged		
164—	3	Tu., at 11	H. F.	Elwood
		M., W., 1 to 4		
—165	3	Th., at 10	H. F.	Elwood
		Lab., to be arranged		
—166	3	Tu., at 11; M., W., 1 to 4	H. F.	Elwood
—168	4	To be arranged	H. F.	Elwood
169—170	3	To be arranged	H. F.	Elwood
—172	1	To be arranged	H. F.	Elwood
201—202	5 to 10	To be arranged	H. F.	Paddock

For Short Courses Only

51—52	4	M., W., F., at 3	H. F. 113	Davis
		Lab., Tu., 8 to 10		
53—54	4	M., W., F., at 1	H. F. 113	Davis
		Lab., M., 8 to 10		
		Tu., 8 to 10		
		W., 8 to 10		
		F., 8 to 10		
55—56	4	M., W., F., at 1	H. F. 112	Montgomery
		Lab., Th., 8 to 10		
57—58	4	M., W., F., at 8	H. F. 107	Paddock
		Lab., Th., 1 to 3		
59—	4	M., W., F., at 10	H. F. 205	Paddock
		Lab., W., 1 to 3		
—60	4	M., Tu., Th., F., at 9	H. F.	Elwood
—62	4	M., W., F., at 9	H. F.	Montgomery
		Lab., Th., 1 to 3		
—64	4	M., W., F., at 10	H. F.	Montgomery
		Lab., Tu., 1 to 3		
65—66	4	M., W., F., at 9	H. F.	Hottes
		Lab., W., 2 to 4		

MATHEMATICS

107—107	3	M., W., F., at 8	U. 310	Razor
		M., W., F., at 9	U. 310	Razor

MATHEMATICS—Continued

Course No.	Hours	Time	Room	Instructor
		M., W., F., at 10	U. 312	Bohannon
		M., W., F., at 1	U. 310	Arnold
		M., W., F., at 2	U. 310	Rasor
		M., W., F., at 3	U. 312	Arnold

METEOROLOGY

—101	2	Tu., Th., at 10	O. 202	Bownocker
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MILITARY SCIENCE AND TACTICS

1—1	1	M., W., Th., F., at 11 M., W., F., at 4; Th., at 11	Ha.	Converse, Tilford, Sherrard
2—2	1	M., W., F., at 11 M., W., F., at 4	Ha.	Converse, Tilford, Sherrard

PHYSICAL EDUCATION**For Men**

101—102	1	Tu., Th., at 10	Gym.	Marsh
		M., W., at 10	Gym.	Trautman
		M., F., at 10	Gym.	Trautman
		W., F., at 10	Gym.	Trautman
		Tu., Th., at 11	Gym.	Trautman
		Tu., Th., at 2	Gym.	Trautman
		M., W., at 2	Gym.	Ohlson
		M., F., at 2	Gym.	Ohlson
		W., F., at 2	Gym.	Ohlson
		Tu., Th., at 3	Gym.	Ohlson
		M., W., at 3	Gym.	Marsh
		M., F., at 3	Gym.	Marsh
		W., F., at 3	Gym.	Marsh
		Tu., Th., at 4	Gym.	Marsh
		M., W., at 4	Gym.	Ohlson
		M., F., at 4	Gym.	Ohlson
		W., F., at 4	Gym.	Ohlson

(Hours to be arranged for corrective work.)

For Women

131—132	1	Tu., at 11; 3 hours to be arranged	Gym.	Breyfogle, Meyer, Hammett
133—134	1	4 hours to be arranged	Gym.	Meyer, Hammett
135—136	3	Tu., Th., 9 and 3	Gym.	Meyer, Hammett

PHYSICS

Course No.	Hours	Time	Room	Instructor
101—	6	Short courses in Engr., to be arranged	Ph.	Heil
103—104	4	M., W., F., at 8	Ph. 205	Earhart, Smith
		M., W., F., at 3	Ph. 205	Earhart, Smith
		Lab., W., 9 to 11 W., 1 to 3	Ph.	
105—106	4	Tu., Th., at 10	Ph. 205	Blake
		Tu., Th., at 3	Ph. 205	Blake
		Lab., Tu., Th., 8 to 10 Tu., Th., 1 to 3		
109—109	3 Agr.	M., W., F., at 8	Ph. 202	Cole
		M., W., F., at 9	Ph. 202	Cole
		M., W., F., at 10	Ph. 202	Cole
		M., W., F., at 1	Ph. 202	Cole
		M., W., F., at 2	Ph. 202	Cole
		M., W., F., at 3	Ph. 202	Cole

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY
AND PHARMACOLOGY

101—102	3	M., W., F., at 8	Bio. 200	
		M., W., F., at 9	Bio. 100	
		M., W., F., at 10	Bio. 200	
		M., W., F., at 1	Bio. 200	
		M., W., F., at 2	Bio. 200	
		M., W., F., at 3	Bio. 200	
—104	3	Tu., Th., 8 to 11	Bio. 208	Bleile

PSYCHOLOGY

101—102	3	M., W., F., at 8	U. 400	All Instruc- tors
		M., W., F., at 8	U. 401	
		M., W., F., at 9	U. 401	
		M., W., F., at 9	U. 400	
		M., W., F., at 9	U. 412	
		M., W., F., at 10	U. 400	
		M., W., F., at 10	U. 401	
		M., W., F., at 10	U. 406	
		M., W., F., at 1	U. 400	
		M., W., F., at 1	U. 406	
		M., W., F., at 1	U. 412	
		M., W., F., at 2	U. 400	
		M., W., F., at 2	U. 401	
		M., W., F., at 2	U. 412	

PSYCHOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		M., W., F., at 3	U. 400	
		M., W., F., at 4	U. 400	
102—101	3	M., W., F., at 3	U. 401	

ROMANCE LANGUAGES

FRENCH

101—102	4	M., Tu., W., Th., at 8	U. 303	All Instruc- tors
		M., Tu., W., Th., at 8	H. F. 203	
		M., Tu., W., Th., at 9	H. F. 203	
		M., Tu., W., Th., at 9	H. F. 204	
		M., Tu., W., Th., at 10	U. 303	
		M., Tu., W., Th., at 10	U. 302	
		M., Tu., W., Th., at 1	U. 303	
		M., Tu., W., Th., at 1	U. 302	
		M., Tu., W., Th., at 2	H. F. 204	
		M., Tu., W., Th., at 2	H. F. 203	
		M., Tu., W., Th., at 3	U. 302	
		M., Tu., W., Th., at 4	U. 301	
—101	4	M., Tu., W., Th., at 8	U. 303	Bruce
102—103	4	M., Tu., W., Th., at 3	U. 301	
103—104	4	M., Tu., W., Th., at 8	U. 302	All Instruc- tors
		M., Tu., W., Th., at 9	U. 302	
		M., Tu., W., Th., at 1	H. F. 203	
		M., Tu., W., Th., at 2	U. 303	
		M., Tu., W., Th., at 4	U. 302	
103—	4	M., Tu., W., Th., at 10	H. F. 204	Chapin

SPANISH

101—102	4	M., Tu., W., Th., at 8	U. 301	All Instruc- tors
		M., Tu., W., Th., at 8	Ph. 303	
		M., Tu., W., Th., at 9	U. 303	
		M., Tu., W., Th., at 9	Ph. 303	
		M., Tu., W., Th., at 10	Ph. 302	
		M., Tu., W., Th., at 10	U. 410	
		M., Tu., W., Th., at 1	U. 301	
		M., Tu., W., Th., at 2	U. 301	
		M., Tu., W., Th., at 2	Ha. 205	
		M., Tu., W., Th., at 3	U. 303	
		M., Tu., W., Th., at 4	U. 303	
101—	4	M., Tu., W., Th., at 1	Ha. 205	Studler
—101	4	M., Tu., W., Th., at 1	Ha. 205	Hamilton
103—104	4	M., Tu., W., Th., at 10	U. 301	Ingraham
		M., Tu., W., Th., at 1	Ph. 303	Hamilton
103—	4	M., Tu., W., Th., at 8	U. 410	Chapin
		M., Tu., W., Th., at 2	U. 302	Chapin

RURAL ECONOMICS

Course No.	Hours	Time	Room	Instructor
101—101	2	Tu., at 10; W., 1 to 4	Ha. 208	Phillips
		M., at 11; W., 8 to 11	Ha. 208	
102—	2	Tu., at 11; Th., 8 to 11	Ha. 208	Falconer
103—103	4	M., W., F., at 8	Ha. 101	Falconer
		M., W., F., at 1	Ha. 101	Falconer
		Lab., Th., 1 to 5		
		S., 8 to 12		
104—104	3	M., W., F., at 8	Ha. 208	Falconer
		M., W., F., at 1	Ha. 208	
105—	2	M., W., at 9	Ha. 204	Falconer
—110	3	M., W., F., at 9	Ha. 208	Lantis
—111	2	Tu., at 11; Th., 8 to 11	Ha. 208	Falconer
113—	3	M., W., F., at 9	Ha. 208	
201—202	3 to 10	M., at 4	Ha. 208	

For Short Courses Only

51—51	4	Tu., Th., at 1	Ha. 208	Phillips
		Lab., M., Tu., 8 to 10	Ha. 209	
		Th., F., 8 to 10	Ha. 209	
52—52	4	Tu., Th., at 11	Ha. 101	
		Lab., to be arranged		
53—	4	To be arranged		
—54	4	To be arranged		

SCHOOL ADMINISTRATION

—122	2	Tu., Th., at 10	
127—	2	Tu., Th., at 2	

SHOPWORK

101—101	2	Tu., at 8; Tu., 1 to 4	S.	Beem, Denman, Smith
		Tu., at 10; F., 1 to 4	S.	
		Tu., at 1; Tu., 8 to 11	S.	
		Tu., at 1; F., 8 to 11	S.	
		Tu., at 10; M., 1 to 4	S.	
		Th., at 1; Th., 8 to 11	S.	
		Th., at 3; M., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	
103—103	2	Tu., at 8; Tu., 1 to 4	S.	Foust, Wright
		Tu., at 10; F., 1 to 4	S.	
		Tu., at 10; M., 1 to 4	S.	
		Tu., at 1; Tu., 8 to 11	S.	

SHOPWORK—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., at 1; F., 8 to 11	S.	
		Tu., at 3; M., 8 to 11	S.	
		Th., at 2; Th., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	

For Short Courses Only

51—51	2	M., at 1; W., 8 to 11	S.
		F., at 11; F., 8 to 11	S.
		W., at 1; W., 2 to 5	S.
		M., at 1; M., 2 to 5	S.
52—52	2	M., at 1; W., 8 to 11	S.
		F., at 11; F., 8 to 11	S.
		W., at 1; W., 2 to 5	S.
		M., at 1; M., 2 to 5	S.

SURVEY OF AGRICULTURE

1	Tu., at 4	H. E. 100	Vivian
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VETERINARY MEDICINE

151—	3	M., W., F., at 8	V. L. 100	White
—152	3	To be arranged		Lambert

For Short Courses Only

51—52	3	M., Th., F., at 11	V. C.
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ZOOLOGY AND ENTOMOLOGY**ZOOLOGY**

101—102	3	L., M., W., at 8	B. Z. 67	All Instructors
		M., W., at 9	B. Z. 67	
		M., W., at 10	B. Z. 67	
		M., W., at 1	B. Z. 67	
		M., W., at 2	B. Z. 67	
		M., W., at 3	B. Z. 67	
		Lab., M., 8 to 10	B. Z. 65, 69	
		M., 1 to 3	B. Z. 65, 69	
		Tu., 8 to 10	B. Z. 65, 69	
		Tu., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10	B. Z. 65, 69	
		Th., 1 to 3	B. Z. 65, 69	
		F., 8 to 10	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
—101	3	Tu., Th., at 3; Sat. 8 to 10	B. Z. 67, 65	
121—122	3 to 5	L., Tu., at 1 Lab., Tu., 2 to 4; Th., F., 1 to 4	B. Z. 111	Kostir
129—	2 to 5	M., Th., at 11	B. Z. 67	Barrows
—130	2 to 5	M., Th., at 11	B. Z. 67	Barrows
131—132	3	M., Th., F., at 11	B. Z. 109	Osburn, Krecker
139—140	2	M., at 10; Tu., 1 to 4	B. Z. 207	Hine
141—142	3 to 5	To be arranged	B. Z.	
145—	3	To be arranged	B. Z.	Barrows
153—154	2 to 5	Tu., Th., at 9	B. Z. 67	Barrows
157—158	3 to 5	M., F., 10; W., 1 to 4	B. Z. 111	Krecker
159—160	3 to 5	L., Tu., Th., at 8 Lab., to be arranged	B. Z. 209	Krecker
201—202	1	To be arranged		Osburn
223—224	3 to 5	To be arranged		Osburn
241—242	5 to 10	To be arranged		
247—248	5	To be arranged		Osburn

ENTOMOLOGY

107—108	3	L., Tu., Th., at 8 Tu., Th., at 1 Lab., W., 8 to 10 W., 1 to 3	B. Z. 100 B. Z. 67 B. Z. 65, 69 B. Z. 65, 69	Metcalf Metcalf Metcalf Metcalf
—112	3	Tu., Th., at 8 Lab., Th., 1 to 4 Sat., 8 to 11	B. Z. 207 B. Z. 207 B. Z. 207	Hine
113—114	4	Tu., Th., at 10 Lab., M., W., F., 1 to 4	B. Z. 109 B. Z. 107	Metcalf
137—138	3 to 5	Tu., Th., at 10 Lab., M., W., F., 1 to 4	B. Z. 109	Metcalf
141—142	3 to 5	To be arranged	B. Z.	
147—	2	Tu., Th., at 10	B. Z. 209	Hine
—148	2	Tu., Th., at 9	B. Z. 109	Osburn
149—150	3 to 5	M., F., at 11 Lab., F., 8 to 11	B. Z. 211	Metcalf
151—152	3	Tu., at 11 Lab., Tu., F., 1 to 4	B. Z. 211	Metcalf
155—156	3	M., W., F., at 9	B. Z. 207	Hine
201—202	1	To be arranged		Osburn
241—242	5 to 10	To be arranged	B. Z.	

For Short Courses Only

51—52	4	M., W., Th., F., at 2	B. Z. 207	Hine
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The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XXII

FEBRUARY, 1918

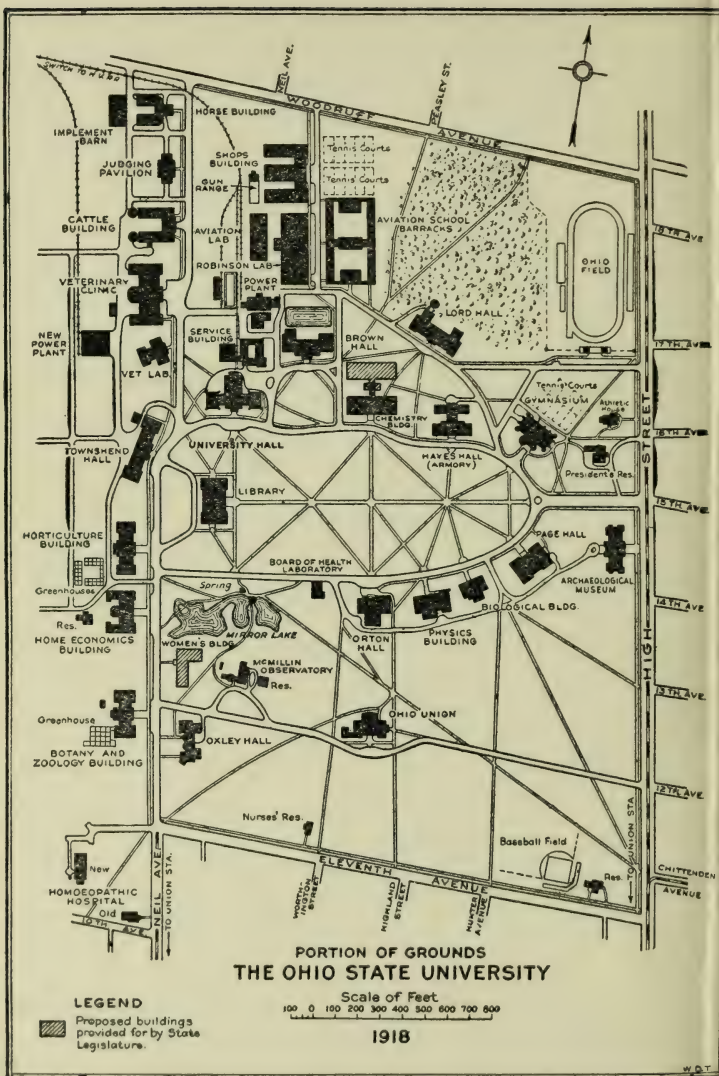
NUMBER 19

COLLEGE OF AGRICULTURE

1918-1919

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice
at Columbus, Ohio, under Act of Congress, July 16, 1894



UNIVERSITY CALENDAR

1918

Entrance examinations, Tuesday to Saturday, June 25 to 29, 8 A. M.

Summer Session, Monday, June 24 to Friday, August 16.

Entrance examinations, Tuesday to Saturday, September 10 to 14, 8 A. M.

Registration Day—First Semester—Tuesday, September 17.

President's Annual Address, Wednesday, September 18, 11 A. M.

Latest date for registration of candidates for a degree at the Commencement of June, 1919, October 1.

Registration Day, Short Courses in Agriculture—First Term—Tuesday, October 15.

Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 20.

Thanksgiving recess begins November 27, 1 P. M., and ends December 3, 8 A. M.

Christmas recess begins Friday, December 20, 6 P. M.

1919

Christmas recess ends Tuesday, January 7, 8 A. M.

Registration Day, Short Courses in Agriculture—Second Term—Tuesday, January 7.

Final examinations, Wednesday, January 22 to Thursday, January 30.

First semester ends Thursday, January 30, 6 P. M.

Farmers' Week, Monday, January 27 to Friday, January 31.

Registration Day—Second Semester—Tuesday, February 4.

Washington's Birthday, Saturday, February 22.

Close of Second Term, Short Courses in Agriculture, Friday, March 21.

Mid-semester reports to the Deans, Saturday, March 22.

Easter recess, Thursday noon, April 10 to Tuesday, April 15, 8 A. M.

Memorial Day, Friday, May 30.

Competitive Drill—Cadet Regiment—Saturday, May 31.

Final examinations, Wednesday, June 4 to Thursday, June 12.

Commencement, Tuesday, June 17.

Entrance examinations, Tuesday, June 24 to Saturday, June 28, 8 A. M.

Summer Session, Monday, June 23 to Friday, August 15.

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THE PRAGUE IN 1866.

JANUARY.							FEBRUARY.							MARCH.							APRIL.							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
....	1	2	3	4	5	1	2	1	2	1	2	3	4	5	6
6	7	8	9	10	11	12	3	4	5	6	7	8	9	3	4	5	6	7	8	9	7	8	9	10	11	12	13	
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16	14	15	16	17	18	19	20	
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23	21	22	23	24	25	26	27	
27	28	29	30	31	....	....	24	25	26	27	28	....	....	24	25	26	27	28	29	30	28	29	30	....	....	....	....
....	31	

MAY.							JUNE.							JULY.							AUGUST.								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
....	1	2	3	4	1	1	2	3	4	5	6	1	2	3
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26	27	28	29	30	31	23	24	25	26	27	28	29	28	29	30	31	25	26	27	28	29	30	31		
....	30		

SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	....	....	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
29	30	27	28	29	30	31	24	25	26	27	28	29	30	29	30	31
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JANUARY.							FEBRUARY.							MARCH.							APRIL.							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
.....	1	2	3	4	1	1	1	2	3	4	5
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8	6	7	8	9	10	11	12	
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19	
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22	20	21	22	23	24	25	26	
26	27	28	29	30	31	23	24	25	26	27	28	23	24	25	26	27	28	29	27	28	29	30	
.....	30	31	
MAY.							JUNE.							JULY.							AUGUST.							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
.....	1	2	3	1	2	
4	5	6	7	8	9	10	1	2	3	4	5	6	7	1	2	3	4	5	1	2	
11	12	13	14	15	16	17	8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	
18	19	20	21	22	23	24	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	
25	26	27	28	29	30	31	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	
.....	27	28	29	30	31	24	25	26	27	28	29	30	
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Office: 201 Home Economics Building—99367
Residence: 16 Fourteenth Ave.—11364

COLLEGE OF AGRICULTURE

Dean.....ALFRED VIVIAN
Office: 100 Townshend Hall—99328
Residence: 375 W. Eighth Ave.—16605

Secretary.....VERLE C. SMITH
Office: 100 Townshend Hall—99328; Campus 481—N. 2206
Residence: 422 W. Eighth Ave.—16495

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises eleven colleges and a graduate school, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Engineering
College of Agriculture	College of Homoeopathic
College of Arts, Philosophy and Science	Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
College of Education	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1918-1919.

(NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.)

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this college consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses

are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

ANIMAL HUSBANDRY SCHOOL. Soil Fertility, Farm Crops, and Animal Husbandry.

DAIRY SCHOOL. Soil Fertility, Farm Crops, and Dairying.

HORTICULTURAL SCHOOL. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

HOMEMAKERS' COURSE. Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information describing the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus, Ohio.

SCIENCE NURSING

The Science Nursing Curriculum offers preparation for women as supervising nurses, hospital superintendents, social service nurses, industrial nurses, and hospital dietitians. It enables the student to accomplish in five calendar years what would ordinarily require seven academic years.

The Science Nursing Curriculum is offered by the Ohio State University in cooperation with the Protestant Hospital Training

School for Nurses. The work in this Curriculum parallels closely the first three years of the Curriculum in Home Economics and the Three-Year Curriculum in Nursing of the Protestant Hospital Training School for Nurses.

The proposed Curriculum meets the requirements of the National League for Nursing Education, of the American Nurses Association, of the National Organization for Public Health Nursing, and the legal requirements of the state of Ohio. The graduates of this course will be eligible for admission to the State examination for the registration of nurses.

Upon the satisfactory completion of the work prescribed in the Ohio State University and the Protestant Hospital Training School for Nurses the student will be recommended for the degree of Bachelor of Science and a Diploma in Nursing.

GENERAL INFORMATION

RESERVE OFFICERS' TRAINING CORPS

Under the Defense Act of June 3rd, 1916, there was established at the Ohio State University a Reserve Officers' Training Corps to which all students are eligible who have completed the requirements in Military Drill for the first and second years. Students entering the Reserve Officers' Training Corps are required to complete a practical and theoretical course in Military Science extending through the Junior and Senior years of residence. When this requirement is completed the President of the United States will grant them a commission as Second Lieutenant in the Officers' Reserve Corps when recommended by the Commandant of Cadets and the President of the University.

During this two years of required work the United States will furnish to the student one complete uniform each year and one ration which is commuted at 30 cents per day during the fiscal year.

WOMEN STUDENTS

As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed four dollars a week. Prospective women students should address Miss Caroline Breyfogle, Dean of Women, Ohio State University, Columbus, Ohio.

FEEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee. The fee for all students is fifteen dollars a semester.

The fee for the short courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology the deposit is ten dollars; in Botany and Zoology the fee is two dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform. The uniform with which the members of the regiment are required to provide themselves costs (without overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that second-hand uniforms were unfit to wear and certainly not

worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid to the bursar of the University before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from three dollars and fifty cents to four dollars per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons at reasonable rates.

Text-books. Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced

slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee	\$30 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposits to cover laboratory materials and breakage	20 00
Uniform, shirt and gloves.....	15 00
Books	15 00
Board—36 weeks at \$3.50 per week.....	126 00
Room rent, at \$8.00 per month.....	72 00
General expenses	100 00
	<hr/>
	\$384 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS IN AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

Students who do not present the recommended units in foreign language will be required to elect foreign language in their freshman year.

No student under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

REQUIREMENTS IN HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large.

Students who do not present these units will be required to carry courses in the University to make up the deficiency and this may delay their graduation.

REQUIREMENTS IN SCIENCE NURSING

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first grade.

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in physics; and four at large. Students who do not present these units will be required to carry courses in the University to make up the deficiency and this may delay their graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

ADMISSION TO SHORT COURSES

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life, twelve consecutive months.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail a blank application for admission. Such applications should be filled out and sent to the Entrance Board previous to the opening of the term.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College except the curriculum in Home Economics, is made uniform.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
English	(101)	2	English	(104)	2
*Mathematics	(107)	3	*Physics	(109)	3
*Drawing	(125)	2	*Geology	(151)	3
*Shopwork	(101)	2	*Shopwork	(103)	2
Survey of Agriculture		1	Military Drill		1
Military Drill		1	Physical Education		1
Physical Education		1			

Students may substitute 4 hours of German, French or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students planning to specialize in Farm Crops should schedule Botany 101-102 the first year and Zoology 101-102 the second year.

Students expecting to major in Landscape Architecture should consult the outlined curriculum. (See page 17.)

*These courses may be taken in either semester.

SECOND YEAR

First Semester

Agricultural Chemistry	(103)	5
Botany	(101)	3
or		
Zoology	(101)	3
Military Drill		1

Second Semester

Soils	(152)	5
Botany	(102)	3
or		
Zoology	(101)	3
Military Drill		1

And at least 7 hours from the following:

Physiology	(101)	3	Physiology	(102)	3
Psychology	(101)	3	Psychology	(102)	3
Economics	(101)	3	Economics	(102)	3
Entomology	(107)	3	Entomology	(108)	3
Foreign Language		4	Foreign Language		4
Animal Husbandry	(135)	4	Animal Husbandry	(137)	3
Horticulture	(101)	4	Horticulture	(118 or 120)	4
*Farm Crops	(101)	4	*Agricultural Engineering	(101)	4
*Dairying	(101)	4	Dairying	(102)	4
Geology	(105)	3	Geology	(106)	3
English (105, 121, 141			English (106, 122, or 133)	2 or 3	
or 145)	2 or 3		Meteorology	(101)	2
Anatomy	(101)	3	Anatomy	(102)	3

*These courses may be taken in either semester.

THIRD YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

FOURTH YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 101-102, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural and forestry subjects must take Economics 101-102, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on page 17.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum outlined on page 19.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine and Dentistry.

FARM EXPERIENCE

As a prerequisite for graduation in all the courses in the College of Agriculture, excepting Home Economics, students graduating in June, 1919, must have had one summer of farm experience; those graduating in 1920, two summers of farm experience; 1921, three summers of farm experience; and 1923, one full year of farm experience. This requirement shall be in-

terpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his junior year.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and thirty-six semester hours, exclusive of military drill and physical education, the student will be recommended for the degree, Bachelor of Science.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103.

SECOND YEAR

First Semester		Second Semester	
Architecture	(131) 2	Art	(141) 2
Civil Engineering	(131) 5	Horticulture	(154) 3
Engineering Drawing	(108) 3	Modern Language	4
Horticulture	(151) 2	Horticulture	(152) 2
Modern Language	4	Horticulture	(150) 3
Military Drill	1	Elementary Landscape Design	
		Architecture	(132) 2
		Military Drill	1

THIRD YEAR

Architecture	(133) 3	Architecture	(136) 3
History		History	
Art	(133) 2	Art	(136) 2
Economics	(101) 3	Economics	(102) 3
Civil Engineering	(133) 1	Horticulture	(162) 4
Horticulture	(157) 3	Horticulture	(158) 3
Landscape Design		Landscape Design	
Entomology	(155) 3	Elective	2 or 3
Elective	2 or 3		

FOURTH YEAR

Architecture	(113) 2	Botany	(116) 3
Art	(142) 3	Plant Pathology	
Horticulture	(159) 4	Horticulture	(172) 1
Horticulture	(164) 3	Proseminary in Landscape	
Civic Design		Horticulture	(160) 4
Horticulture	(169) 3	Advanced Design	
Psychology	(101) 3	Horticulture	(170) 3
		Horticulture	(166) 3
		Horticulture	(165) 3

HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Art	(119)	1	English	(104)	2
English	(101)	2	Zoology	(102)	3
Zoology	(101)	3	or		
or			Botany	(102)	3
Botany	(101)	3	Modern Language	(102, 104 or 106)	4
Modern Language	(101 or 103)	4	French or German		
French or German			Home Economics	(112)	2
Home Economics	(111)	2	Physical Education		1
Physical Education		1			

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic			Home Economics	(102)	5
Home Economics	(101)	5	Physiology	(102)	3
Physiology	(101)	3	Modern Language	(104 or 106)	4
Modern Language	(103)	4	French or German		
French or German			Art	(141)	2
Art	(131)	2	Physical Education		1
Physical Education		1			

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Bacteriology	(107)	4	Home Economics	(104)	3
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Bibliography	(103)	$\frac{1}{2}$	Home Economics	(118)	3
Engineering Drawing	(127)	$1\frac{1}{2}$	Engineering Drawing	(128)	$1\frac{1}{2}$

Electives to make at least 15 hours throughout the year.

FOURTH YEAR

Sociology	(101)	3	Sociology	(102)	3
Home Economics	(105)	2 to 5			
Home Economics	(119)	3			

Electives to make at least 15 hours throughout the year. Electives for the third and fourth years must include not less than six hours of English, and for students not offering entrance credit in American history, six hours of American history.

Requirements for a Degree

Upon the satisfactory completion of the course as outlined, under the restrictions and requirements prescribed above, the student will be recommended for the degree, Bachelor of Science.

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester

Entomology	(107)	3
Botany	(101)	3
Modern Language		4
French, Spanish or German		
Farm Crops	(101)	4
Art	(131)	2
or		
Public Speaking	(101)	2
Military Drill		1

Second Semester

Entomology	(108)	3
Botany	(102)	3
Modern Language		4
French, Spanish or German		
Military Drill		1
Elective		6

THIRD YEAR

Entomology	(113)	4
Entomology	(153)	2
Bacteriology	(107)	4
Physiology	(101)	3
or		
Anatomy	(101)	3
Architecture	(111)	2
Elective	2 or 3	

Entomology	(114)	4
Botany	(116)	3
Bacteriology	(108)	4
Physiology	(102)	3
or		
Anatomy	(102)	3
Elective		3

NOTE:—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(149)	3
Entomology	(147)	2
Entomology	(151)	3
Elective	9 or 10	

Entomology	(112)	3
or		
Entomology	(150)	3
Entomology	(148)	2
Entomology	(152)	3
Elective	9 or 10	

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline of the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 14-17.

AGRICULTURAL CHEMISTRY AND SOILS

Students who take the major subject in Agricultural Chemistry and Soils may specialize in any of the following phases of the subject:

1. Chemistry of Animal Nutrition.
2. Chemistry of Dairy Products.
3. Chemistry of Fertilizers.
4. Chemistry of Plant Life.
5. Chemistry of Soils.
6. Food Inspection and Analysis.

All students intending to major in this department should consult Mr. Lyman or Mr. Bear for advice in outlining a curriculum. It is desirable that this consultation be held soon after admission to the College in order that the student may take best advantage of optional and elective privileges.

Students majoring in dairying, animal husbandry, crops, horticulture, botany and zoology can elect minors in the department of Agricultural Chemistry and Soils to advantage.

ANIMAL HUSBANDRY

First Year: Uniform first year

Second Year: Animal Husbandry (135) 4 hours
Elementary Live Stock Judging
Animal Husbandry (137) 3 hours
Principles of Feeding

Third Year: Animal Husbandry (139) 3 hours
Horse Production and Management
Animal Husbandry (141) 3 hours
Beef Cattle Production and Management

- Animal Husbandry (143) 3 hours
 - Swine Production and Management
- Animal Husbandry (145) 3 hours
 - Dairy Cattle Production and Management
- Animal Husbandry (147) 3 hours
 - Sheep Production and Management

- Fourth Year:**
- Animal Husbandry (149) 4 hours
 - Advanced Breed Study
 - Animal Husbandry (151) 3 hours
 - Advanced Live Stock Judging
 - Animal Husbandry (153) 4 hours
 - Meats and Meat Products
 - Agricultural Chemistry (111-112) 2 or 4—2 or 4 hours
 - Animal Nutrition
 - Animal Husbandry (155) 3 hours
 - Live Stock Markets and Marketing
 - Animal Husbandry (157) 4 hours
 - Animal Genetics
 - Animal Husbandry (159) 3 hours
 - Wools and Other Animal Fibers
 - Animal Husbandry (161) 2 hours
 - Herd Book and Pedigree Study
 - Animal Husbandry (163-164) 2 to 5—2 to 5 hours
 - Research and Thesis

POULTRY HUSBANDRY

- Third Year:**
- Animal Husbandry (117-118) 3—3 hours
 - Poultry Husbandry
 - Animal Husbandry (120) 1 hour
 - Poultry Feeding
 - Animal Husbandry (122) 1 hour
 - Incubator Practice
- Fourth Year:**
- Animal Husbandry (119) 2 hours
 - Poultry Management
 - Animal Husbandry (124) 2 hours
 - Poultry Judging

DAIRYING

- First Year:** Uniform first year
- Second Year:** Dairying (101) 4 hours
Principles of Dairying
Dairying (102) 4 hours
Farm Dairying
- Third Year:** Dairying (115) 2 hours
Dairy Buildings
Dairying (105) 4 hours
Buttermaking
Dairying (111) 2 hours
Dairy Mechanics
Dairying (107) 3 hours
Cheesemaking
Bacteriology (107) 4 hours
General Bacteriology
Bacteriology (110) 4 hours
Dairy Bacteriology
- Fourth Year:** Dairying (113-114) 2—2 hours
Advanced Dairying
Dairying (103) 4 hours
City Milk Supply
Dairying (110) 2 hours
Ice-Cream Making
Dairying (119-120) 1—1 hour
Proseminary
Dairying (116) 2 hours
Milk Condensing

FARM CROPS

- First Year:** Botany 101-102 instead of Zoology 101-102.
Otherwise, uniform first year
- Second Year:** Farm Crops (101) 3 hours
Field Crop Production
Zoology (115) 3 hours
General Principles of Heredity

Third Year: Farm Crops (109) 3 hours
Cereal Crops
Farm Crops (111) 3 hours
Forage Crops
Farm Crops (113) 3 hours
Plant Breeding
Botany (125-126) 4—4 hours
Plant Physiology

Fourth Year: Farm Crops (123) 2 hours
Crop Ecology
Farm Crops (112) 2 hours
Special Crops
Botany (116) 3 hours
Plant Pathology

FLORICULTURE

First Year: Uniform first year

Second Year: Horticulture (101) 4 hours
Principles of Horticulture
Horticulture (132) 4 hours
Greenhouse Construction and Management

Third Year: Horticulture (141-142) 4—4 hours
Commercial Floriculture
Horticulture (145) 3 hours
Garden Flowers
Horticulture (156) 2 hours
Landscape Architecture

Fourth Year: Horticulture (143) 3 hours
The Flower Shop
Horticulture (146) 3 hours
School Gardens
Horticulture (147-148) 3—3 hours
Systematic Floriculture
Horticulture (144) 3 hours
Conservatory and Bedding Plants

POMOLOGY AND VEGETABLE GARDENING

First Year: Uniform first year

Second Year: Horticulture (101) 4 hours
Principles of Horticulture
Horticulture (120) 4 hours
Small Fruits and Grapes

Third Year: Horticulture (103-104) 4—4 hours
Commercial Vegetable Gardening
Horticulture (105-106) 4—4 hours
Pomology

Fourth Year: Horticulture (109-110) 3—3 hours
Experimental Horticulture
Horticulture (133) 3 hours
By-Products
Horticulture (132) 4 hours
Greenhouse Construction and Management
Horticulture (121-122) 4—4 hours
Systematic Pomology
Horticulture (131) 4 hours
Systematic Vegetable Gardening
Horticulture (146) 3 hours
School Gardens

PLANT PATHOLOGY

First Year: Uniform first year

Second Year: Botany (120) 3 hours
Field Botany

Third Year: Botany (127-128) 4—4 hours
Plant Pathology
Botany (139-140) 3—3 hours
Advanced Plant Pathology

Fourth Year: Botany (125-126) 4—4 hours
Plant Physiology
Botany (133-134) 3 to 5—3 to 5 hours
Minor Investigations

RURAL ECONOMICS

- First Year:** Uniform first year
- Second Year:** Economics (101-102) 3—3 hours
Principles of Economics
Rural Economics (101) 2 hours
Farm Accounting
- Third Year:** Rural Economics (104) 3 hours
Agricultural Economics
Rural Economics (110) 3 hours
Rural Community Life
Rural Economics (113) 3 hours
The Distribution of Farm Products
- Fourth Year:** Rural Economics (103) 4 hours
Farm Management
Rural Economics (116) 2 hours
Cooperation in Agriculture
Rural Economics (102) 2 hours
Advanced Farm Accounting
Rural Economics (118) 2 hours
Rural Community Development
Rural Economics (105) 2 hours
Historical and Comparative Agriculture
Rural Economics (111) 1 hour
Advanced Farm Management

CURRICULUM IN SCIENCE NURSING

FIRST YEAR
(At the University)

First Semester			Second Semester		
Chemistry	(105) or (109)	4	Chemistry	(106) or (110)	4
English	(101)	2	English	(104)	2
Paragraph Writing			Paragraph Writing		
Anatomy	(101)	3	Anatomy	(116)	3
Elementary			Digestive System		
Psychology	(101)	3	Psychology	(102)	3
Elementary			Elementary		
English	(133)	3	English	(146)	3
Engineering Drawing	(127)	1½	Engineering Drawing	(128)	1½
Mechanical Drawing			House Planning		
Physical Education	(131)	1	Physical Education	(132)	1

SECOND YEAR
(At the University)

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic Chemistry			Household Chemistry		
Physiology	(101)	3	Physiology	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	4	Bacteriology	(108)	4
Physical Education	(133)	1	Physical Education	(134)	1

At the close of the second semester of the second year, the student will report immediately to the Protestant Hospital Training School for Nurses for the preliminary nursing period of twelve weeks.

SUMMER TERM
PRELIMINARY NURSING PERIOD
(At Protestant Hospital)

Science Nursing	(101)	3
Elementary Nursing		
Science Nursing	(102)	1
History and Ethics of Nursing		
Science Nursing	(103)	1
Drugs and Solutions		
Science Nursing	(104)	7
Hospital Ward Duty		

The preliminary nursing period requires twelve weeks of eight hours per day with approximately one lecture and seven hours of ward duty each day.

THIRD YEAR

First Semester
(At the Protestant Hospital)Second Semester
(At the University)

Science Nursing	(111)	2	Agricultural Chemistry	(124)	4
Elements of Pathology			Household Chemistry		
Science Nursing	(113)	2	Sociology	(101)	3
Medical Nursing			Economics	(120)	3
Science Nursing	(115)	1	Public Health	(124)	2
Surgical Nursing			Public Health Problems		
Science Nursing	(117)	1	Public Speaking	(102)	2
Materia Medica			Debating		
Science Nursing	(119)	10	Science Nursing	(122)	2
Hospital Ward Duty			Pro-seminary in Case Studies		

At the close of the second semester of the third year, the student will report immediately to the Protestant Hospital Training School for Nurses for the second nursing period of eight weeks. A month's vacation will be arranged.

SUMMER TERM

SECOND NURSING PERIOD

(At Protestant Hospital)

Science Nursing.....	(123)	8
(Hospital Ward Duty)		

FOURTH YEAR

First Semester
(At the Protestant Hospital)Second Semester
(At the University)

Science Nursing	(125)	1	Home Economics	(110)	4
Gynecological Nursing			Dietetics		
Science Nursing	(127)	1	Home Economics	(119)	3
Orthopedic Nursing			The House		
Science Nursing	(129)	2	Public Health	(106)	2
Obstetrical Nursing			Public Health Nursing		
Science Nursing	(131)	2	Public Health	(110)	2
Nursing in Diseases of Infants and Children			Preventive Medicine		
Science Nursing	(133)	2	Sociology	(112)	4
Nursing in Communicable Diseases			Preventive Philanthropy		
Science Nursing	(135)	1			
Nursing in Diseases of the Eye, Ear, Nose and Throat					
Science Nursing	(137)	1			
Operating Room Technic					
Science Nursing	(139)	6			
Hospital Ward Duty					

At the close of the second semester of the fourth year the student will report immediately to the Protestant Hospital Train-

ing School for Nurses for the third nursing period of eight weeks. A vacation will be arranged.

SUMMER TERM
THIRD NURSING PERIOD
(At Protestant Hospital)

Science Nursing.....(141) 8
(Hospital Ward Duty)

FIFTH YEAR

First Semester

Second Semester

The work of these two semesters will be arranged between the Protestant Hospital Training School for Nurses and the University. The student will be permitted to make a selection of the field of nursing in which she wishes to specialize. The courses selected must aggregate not less than sixteen credit hours for each semester. Elective courses, divided into field and class-room work, will be arranged covering institutional nursing, private duty nursing and public health nursing. These courses will include hospital administration; hospital social service; nursing in mental and nervous diseases; nursing in skin, occupational and venereal diseases; nursing in diseases of infants and children; district nursing, school nursing, tuberculosis nursing and industrial nursing.

Degree.—Upon the satisfactory completion of the work prescribed above the student will be granted the degree of Bachelor of Science and a Diploma in Nursing.

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are co-operative between the University and other colleges of the State, and become effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the co-operating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capitol University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science at the end of five years.

FIRST YEAR

First Semester			Second Semester		
English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	3	Botany	(102)	3
American, European or			American, European or		
Industrial History		3	Industrial History		3
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

English	(141 or 145)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
Engineering Drawing	(125)	2	Art		2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Physics	(103)	4	Physics	(104)	4
Geology		3	Geology		3

Elective 6 or 7 hours the year on approval of adviser.

FOURTH YEAR

Animal Husbandry	4	Choice of any two of these the
Agricultural Chemistry	4	fourth year. Remaining two the
Rural Economics	4	fifth year.
Farm Crops or Soils	4	

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE**FIRST YEAR****First Semester**

English	(101)	2
Chemistry	(105 or 109)	4
Modern Language		4
Botany	(101)	3
or		
Zoology	(101)	3
American, European or		
Industrial History		3
Military Drill		1
Physical Education		1

Second Semester

English	(104)	2
Chemistry	(106 or 110)	4
Modern Language		4
Botany	(102)	3
or		
Zoology	(102)	3
American, European or		
Industrial History		3
Military Drill		1
Physical Education		1

SECOND YEAR

English	(141 or 145)	3
Mathematics		3
Botany	(101)	3
or		
Zoology	(101)	3
Engineering Drawing	(125)	2
Modern Language		4
Military Drill		1

English	(133)	3
Mathematics		3
Botany	(102)	3
or		
Zoology	(102)	3
Art	(131)	2
Modern Language		4
Military Drill		1

THIRD YEAR

Economics	(101)	3
Physics	(103 or 105)	4
Geology	(103)	3
Zoology	(107)	3
or		
Botany	(125)	4

Economics	(102)	3
Physics	(104 or 106)	4
Geology	(104)	3
Zoology	(108)	3
or		
Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year.)

Agricultural Chemistry (4 hours throughout the year.)

In addition to these six hours elective throughout the year, with the approval of the department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Entomology	(107 and 108)	3
Rural Economics	(103 and 104)	4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that

in the Junior year a choice of either Entomology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	3	Botany	(102)	3
Physical Education		1	Physical Education		1

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	5
Physiology	(101)	3	Physiology	(102)	3
French or German		4	French or German		4
Art	(119)	1	Home Economics	(112)	2
Home Economics	(111)	2	Textiles		
Textiles			Engineering Drawing	(128)	1½
Engineering Drawing	(127)	1½	Physical Education		1
Physical Education		1			

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	3	Home Economics	(104)	3
English	(141 or 145)	3	Sanitation		
Art	(131)	2	English	(133)	3
			Art	(141)	2

FOURTH YEAR

Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Psychology	(101)	3	Dietetics		
Sociology	(101)	3	Psychology	(102)	3
Home Economics	(118)	3	Sociology	(102)	3
House Decoration			Home Economics	(119)	3
Elective		3	House Decoration		
			Elective		3

FIFTH YEAR

First Semester		Second Semester	
Home Economics	(105) 3	Home Economics	(106) 3
Proseminary		Proseminary	
History of Education	(101) 3	History of Education	(102) 3
Elective	9	Elective	9

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3), 108 (2), 109 (2).

Sociology 107 (3), 120 (3).

Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).

Chemistry 151-152 (2—2), 153-154 (2 or 3—2 or 3).

Philosophy 115 (2)—116 (2).

Greek 115 (2)—116 (2).

Physiology 104 (3).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements of the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

Candidates who expect to enter this course must obtain from the Entrance Board by mail a blank application for admission. Such applications should be filled out and sent to the Entrance Board previous to the opening of the term.

THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

First Term		Second Term	
Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Agricultural Engineering	(51) 4	Dairying	(52) 3
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

First Term		Second Term	
Horticulture	(53) 4	Horticulture	(54) 4
Soils	(53) 3	Soils	(54) 3
Dairying	(53) 3	Agricultural Engineering	(52) 4
Rural Economics	(51) 4	Animal Husbandry	(54) 4
Farm Crops	(51) 4	Farm Crops	(52) 4
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR

First Term

Horticulture	(57)	4
Horticulture	(67)	4
Rural Economics	(51)	4
Military Drill		1
Elective		6

Second Term

Horticulture	(58)	4
Horticulture	(60)	4
Rural Economics	(52)	4
Military Drill		1
Elective		6

ELECTIVES

Animal Husbandry	(59)	3	Animal Husbandry	(60)	3
Bacteriology	(51)	4	Dairying	(56)	3
Dairying	(57)	3	Dairying	(58)	3
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Horticulture	(59)	4	Horticulture	(66)	4
Horticulture	(65)	4	Horticulture	(64)	4
Dairying	(55)	3	Horticulture	(62)	4

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State, who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year but yet desire some training in the principles of agriculture. On other farms are found mature men, who are past the usual school age but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigations in research and their practical application to work on the farm.

DAIRYING

The work in Dairying is divided into two courses of four weeks each. The first course, "Farm Dairying and Advanced Registry," beginning January 6th, 1919, and ending January 31st, 1919, will be given to meet the demand of those who wish to

receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, and the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufacturers," begins February 3rd, 1919, and ends February 28th, 1919. This course has been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter, cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this department and is given at a time of the year when the butter-makers, cheese-makers, ice cream-makers and milk men can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN, LYMAN, BEAR, AND ALLEN (Non-Resident),
ASSISTANT PROFESSOR T. G. PHILLIPS, MR. HUTCHISON, MR.
McCLURE, MR. CONREY, AND DEPARTMENT ASSISTANTS

Students expecting to major in Agricultural Chemistry and Soils are requested to interview Professors Lyman and Bear concerning election of courses in this and related departments.

AGRICULTURAL CHEMISTRY

103. General Agricultural Chemistry. Five credit hours. First semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

An introductory course on the chemistry of plants and animals.

115. General Agricultural Chemistry. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, a satisfactory course in organic chemistry. Mr. Phillips.

Lectures on the application of chemistry to plant and animal life. This course is intended for students who have had satisfactory preparation in organic chemistry, and for such students it takes the place of course 103 as a requirement. Students who have had work in quantitative analysis should consult with the department before registering for either of these courses.

123-124. Household Chemistry. Four credit hours. The year. (123) Home Economics, second year, second semester; (124) third year, first semester. Prerequisite, Chemistry 106 or 110, and 127. Mr. Lyman, Mr. Phillips.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

***107-108. Dairy Chemistry.** Three to five credit hours. The year. Prerequisite, two years of Chemistry including Agricultural Chemistry 103. Mr. Lyman.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

111-112. Animal Nutrition. Two to four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisites, Agricultural Chemistry 103 or equivalent, and Animal Husbandry 137. Mr. Lyman.

A chemical study of food constituents, their digestion and effect on the body. A discussion of problems in growth, maintenance and fattening of animals. The study of complex feeds, such as are used on the farm, from the standpoint of the more recent conceptions of animal nutrition. Laboratory work includes the separation and study of food nutrients, the determination of coefficients of digestibility, and the effect of selected rations on animals. The lectures may be taken alone for two credit hours.

113. Chemistry of Insecticides and Fungicides. Two credit hours. Second semester. One lecture and one laboratory period each week. Prerequisite, two years of Chemistry including Agricultural Chemistry 103. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

114. Plant Chemistry. Two credit hours. Second semester. Two lectures each week. Prerequisite, two years of Chemistry including Agricultural Chemistry 103 or its equivalent in organic chemistry and quantitative analysis. Mr. Phillips.

*Not given in 1918-1919.

Lectures will be given on the chemistry of plant constituents, plant metabolism and a few selected plant products.

116. Plant Chemistry. Two credit hours. Second semester. Six hours laboratory work each week. To be preceded or accompanied by Agricultural Chemistry 114. Mr. Phillips.

Work will be done along the lines of detection, determination and separation of plant constituents.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103 or equivalent. Mr. Lyman.

Lectures on composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash,

protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Five credit hours. Second semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Vivian, Mr. Bear.

An introductory course on the origin and the chemical and physical properties of soils, their management and fertilization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

153-154. Soil Fertility. Two credit hours. The year. Prerequisite, Soils 152. Mr. Bear.

Lectures and references reviewing the investigational work which has been and is now being conducted on some of the more important soil problems.

155-156. Chemical Analysis of Soils. Three credit hours. The year. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. McClure.

A study of the methods in the quantitative chemical analysis of soils.

157. Origin and Classification of Soils. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Soils 152. Mr. Bear, Mr. Conrey.

A study of the soils of Ohio. Laboratory work will include practice in soil surveying. Field trips will be made, including a trip to the experimental farms at Wooster, and to several substation farms.

158. Soil Physics. Three credit hours. Second semester. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. Conrey.

The application of the principles of physical chemistry to the study of soil problems.

159-160. Soil Literature. One credit hour. The year. Prerequisite, Soils 152. Mr. Bear.

Library work in reviewing all the important investigational work which has been done on some soil problem in which the student may be interested. Designed to familiarize the student with sources of information and current soil literature.

161-162. Chemistry of Fertilizers. One or four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear.

One lecture a week on the processes of fertilizer manufacture and one on the methods of fertilizer control. The laboratory work will include an examination of the various fertilizing materials and practice in routine fertilizer analyses. One lecture a week on the processes of fertilizer manufacture can be elected for one credit hour.

FOR GRADUATES

201-202. Research Work in Soils.

203-204. Soil Seminary.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL EDUCATION

Office, 103 Townshend Hall

ASSISTANT PROFESSORS STEWART AND JOHNSON,
MR. MONTGOMERY

101. Teaching of Vocational Agriculture in Secondary Schools. Three credit hours. Either semester. Three lectures each week. Open to juniors and seniors who have obtained the consent of the department. Mr. Stewart.

The course of study, its essentials and its provisions for adaptations to local conditions; laboratory work, home projects, and illustrated material in their relation to class-room instruction; textbooks and library reference books in agriculture that meet the needs of secondary schools; the teacher of agriculture as a factor in community life.

103-104. Practice Teaching of Agriculture in Secondary Schools. Two credit hours. The year. Prerequisite, Agricultural Education 101 or Agricultural Education 101 concurrent with 103. Mr. Stewart.

Observation and practice teaching of secondary agriculture in nearby cooperating rural high schools will be given under the supervision of critic teachers. Class-room instruction, laboratory and home projects as conducted in these schools will receive emphasis.

AGRICULTURAL ENGINEERING

Office, 205 Home Economics Building

PROFESSOR RAMSOWER, ASSISTANT PROFESSOR IVES,
MR McCUEN, MR. POTTER

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125, Mathematics 107 and Physics 109. Mr. Ramsower, Mr. Potter.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125 and Mathematics 107. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different

materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

106. Drainage. Three credit hours. Second semester. Prerequisites, Mathematics 107 and Soils 152. Mr. Ramsower, Mr. Ives, Mr. McCuen, Mr. Potter.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth and distance apart. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit.

110. Advanced Farm Machinery. Three credit hours. First semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field and power machinery. Practice in assembling and disassembling some of the machines studied, together with problems and tests covering various features of design and operation.

107. Farm Power. Four credit hours. Second semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, tractors, steam engines, wind-mills and electric power.

108. Concrete Construction. Three credit hours. Second semester. Prerequisite, Mathematics 107. Mr. Ives.

Lectures and laboratory covering the making of forms, simple test of concreting materials, proportioning materials for different purposes, mixing and placing, reinforcement, brick work. Written reports will be required for each day's laboratory work.

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Ramsower, Mr. Ives, Mr. McCuen, Mr. Potter.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricul-

tural engineering. Work may be chosen pertaining to farm structures, drainage, farm power, concrete construction, or field machinery.

114. Design of Dairy Buildings. Two credit hours. Second semester. This course is designed for students specializing in Dairying, and must be preceded by Dairying 115 and Engineering Drawing 125. Mr. Ives.

A few lectures will be given relative to strength of materials and problems in design, but the greater part of the time will be devoted to the planning of ice-houses, milk-houses, dairy barns, cheese factories, condensories, manure pits, water supply and sewage disposal plants as related to the dairy business, following the specifications given in Dairying 115.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil and steam engines, tractors, and windmills.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

AGRICULTURAL EXTENSION

Office, 115 Townshend Hall

PROFESSOR WHEELER

102. Extension Methods. Two credit hours. Second semester. Two recitations each week. Open only to seniors in the College of Agriculture. Mr. Wheeler.

An introduction to extension methods and a discussion of the forms of organization for carrying on extension work.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT AND HOCKETT, ASSISTANT PROFESSOR A. M. SCHLESINGER, MR. WOOD, MR. WITTKÉ

101-102. History of the United States. (1763-1916). Three credit hours. The year. Mr. Hockett, Mr. Schlesinger, Mr. Wood, Mr. Wittke.

American History 101 is given also during the second semester, and American History 102 during the first semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1916. Text-book, discussion and collateral readings.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE, ASSISTANT PROFESSORS BUCK AND WARREN, MR. KNOUFF, MR. BAKER

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Baker.

Fishes, amphibians and reptiles.

102. Comparative Anatomy of the Vertebrates. Three or five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Elective. Prerequisite, Anatomy 101, or an equivalent. Mr. Baker.

Birds and mammals.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

Karyokinesis and the early development of fishes and amphibians.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

The development of reptiles and birds.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The histology and early development of the frog.

116. The Digestive System. Three credit hours. Second semester. One lecture and four laboratory hours each week. Elective for third or fourth year students. Prerequisite, one year's work in biological science. Mr. Landacre, Mr. Buck, Mr. Warren.

A study of the gross and microscopic structure of the digestive system and associated organs in one of the higher mammals and in man.

118. Elementary Comparative Anatomy of Vertebrates. Three to five credit hours. Second semester. One lecture and five to eight laboratory hours each week. Prerequisites, Zoology 101, Physiology 101 or an equivalent. Mr. Landacre, Mr. Knouff, Mr. Baker.

A preliminary study of the comparative anatomy and embryology of the vertebrates accompanied by careful dissection of the shark, frog and cat. This course meets the premedical requirements in anatomy.

ANIMAL HUSBANDRY

Office, Judging Pavilion

PROFESSORS PLUMB AND KAYS, ASSISTANT PROFESSORS JACOBY, COFFEY, AND SALISBURY, MR. STONE, MR. CONKLIN, AND DEPARTMENT ASSISTANTS

135. Elementary Live Stock Judging. Four credit hours. Either semester. Second year. Two lectures and two laboratory periods each week. Mr. Coffey, Mr. Stone.

Students intending to give much attention to animal husbandry courses should take this course the first semester. Students taking but one course in animal husbandry are required to take this.

An elementary study of the relationship of form to function in horses, cattle, sheep and swine.

137. Principles of Feeding. Three credit hours. Either semester. Second year. Prerequisite, Animal Husbandry 135 and Agricultural Chemistry. Mr. Coffey, Mr. Stone.

An elementary study of digestion and assimilation, feeding standards, composition of feeding stuffs and feeding practices.

139. Horse Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 125. Mr. Kays.

A general consideration of the breeds, breeding, feeding and management of horses.

141. Beef Cattle Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 125. Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of beef cattle.

143. Swine Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 125. Mr. Coffey.

A general consideration of the breeds, breeding, feeding and management of swine.

145. Dairy Cattle Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 125. Mr. Plumb, Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of dairy cattle.

147. Sheep Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 125. Mr. Stone.

A general consideration of the breeds, breeding, feeding and management of fine-wool and mutton sheep.

149. Advanced Breed Study. Four credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 139, 141, 143, 145. Mr. Plumb.

Special consideration given to the history and development of the more important breeds involving both text and lectures, with assignment reading and pedigree study.

151. Advanced Live Stock Judging. Three credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 149. Mr. Kays.

An advanced class for senior students who have had the more elemental instruction in judging. The purpose is to give a more detailed consideration to type and breed conformation, with emphasis on practice in groups and classes.

153. Meats and Meat Products. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 141, 147, 149. Mr. Conklin.

A study of the composition and value of meats; the slaughtering of farm animals and the methods of handling and preparing meats and the by-products of slaughter.

155. Live Stock Markets and Marketing. Three credit hours. First semester. Prerequisites, Animal Husbandry 135 and 137. Mr. Plumb.

The live stock markets, their organization methods and rules; methods of shipment and sale, etc. Considerable library work and investigation is required, and the course is handled after the manner of the seminary.

157. Animal Genetics. Four credit hours. Second semester. Lectures and one laboratory period. Prerequisites, Zoology 101, 102 and 125, and Animal Husbandry 135. Mr. Kays.

Advanced work in heredity, variation, etc., in its application to domestic animals. Special attention will be given to practices associated with breeding farm animals.

159. Wools and Other Animal Fibers. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 137, 147. Fourth year. Mr. Plumb.

The character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, uses of fibers in manufacturing, etc.

161. Herd Book and Pedigree Study. Two credit hours. Second semester. Third or fourth year. Prerequisites, Animal Husbandry 135, 137, 149. Mr. Kays.

A study of herd book methods and pedigree composition.

163-164. Research and Thesis. Two to five credit hours. The year. For fourth year students only, or graduates specializing in Animal Husbandry. Mr. Plumb, Mr. Kays, Mr. Coffey.

Students will elect work in desired subjects after conference with the instructor in charge.

Students desiring work in Animal Nutrition, see Agricultural Chemistry 111-112.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern states, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to visit the poultry plant morning, noon and afternoon, to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of live stock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey, Mr. Stone.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Salisbury.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year. Mr. Stone.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

ARCHITECTURE

Office, 105 Brown Hall

PROFESSORS BRADFORD, CHUBB, AND SMITH, MR. HASKETT,
MR. RONAN

131. Elements of Architecture. Two credit hours. First semester. Prerequisite, Art 131 and Engineering Drawing 125.

132. Elements of Architecture. Two credit hours. Second semester. Prerequisite, Architecture 131.

133. History of Architecture. Three credit hours. First semester. Prerequisite, Architecture 132.

136. History of Architecture. Three credit hours. Second semester. Prerequisite, Architecture 133.

History of modern architecture.

111. Photography. Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. Principles of Architectural Composition. Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 201 Horticulture Building

PROFESSOR KELLEY, ASSISTANT PROFESSOR ROBINSON, MR.
NORRIS, MR. CHRISTENSEN, MISS TALBOT

131-132. Elementary Drawing. Two credit hours. The year. Two two-hour periods each week.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

Art 131 is given also during the second semester.

Art 132 is given also during the first semester.

133. Advanced Drawing. Two credit hours. Either semester. Prerequisite, Art 131-132. Two two-hour periods each week.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

136. Water Color Painting. Two credit hours. Either semester. Prerequisites, Art 133 and 141. Two two-hour periods each week.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. One lecture each week.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131, 141.

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSOR MORREY, ASSISTANT PROFESSOR STARIN, MR. FRONING,
MRS. MASTERS, AND DEPARTMENT ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mr. Froning, Mrs. Masters, and department assistants.

This course is a prerequisite to all the elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationship of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical bio-chemical actions.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mr. Froning, Mrs. Masters.

A study of the more important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation; also, in the lectures, ways of transmission and methods of protection against infectious disease; sanitation and the theories of immunity.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110 or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112 or equivalents. Mr. Morrey.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLICAL LITERATURE, HISTORY AND EXEGESIS

Office, 201 Home Economics Building

PROFESSOR BREYFOGLE

101. Biblical Literature. Three credit hours. First semester. Lectures, quiz and reports. Miss Breyfogle.

A consideration of the literature, history and religion of the Old Testament.

This is a general course touching upon the historical crises of the Old Testament with an attempt to recreate the political, economic, and social conditions as a basis for the better understanding of the moral and religious teachings. A stereopticon will be used, showing the latest discoveries in Palestine, Egypt and Assyria.

102. Historical Christianity in Outline. Three credit hours. Second semester. Miss Breyfogle.

A consideration of Judaism, of the life, work and teachings of the Founder of Christianity, and of Apostolic teaching.

This course is intended to give the student a systematic knowledge of the New Testament in its historical setting. It will consider the relation of Christianity to Hellenic Judaism, the teachings of Jesus as shown by a comparison of the gospels, and the expansion of Christianity throughout the world during the Apostolic times. Stereopticon views will be freely used and an endeavor made to familiarize the student with the text.

***103-104. The History of Religion in Outline.** Three credit hours. The year. Lectures, quiz and reports. Miss Breyfogle.

A consideration of the great book religions of the world.

BIBLIOGRAPHY

Office, The Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogues and the publications of the

*Not given in 1918-1919.

United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS SCHAFFNER AND TRANSEAU, ASSISTANT PROFESSORS GRIGGS AND STOVER, MISS DETMERS, MR. SEARS, MR. SAMPSON, AND DEPARTMENT ASSISTANTS

101-102. General Botany. Three credit hours. The year. Two recitations and two laboratory hours each week. Mr. Griggs, Mr. Stover, Miss Detmers, Mr. Sears, Mr. Sampson.

A study of the structures and processes of plants, and their relation to the environment. A general survey of the great plant groups.

107. Plant Histology. Two credit hours. First semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Miss Detmers.

The physical structure and properties of protoplasm are studied, then, in order, the cell, the tissues, tissue systems and finally the histological structure of the plant organs are taken up.

108. Ecological Anatomy. Two credit hours. Second semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Miss Detmers.

A study of plant structures in relation to environment.

110. General Dendrology. Two credit hours. First semester. One lecture and two laboratory hours each week. Mr. Griggs.

Text-book: Schaffner's Field Manual of Trees.

A study of trees and shrubs, with practice in the identification of woody plants, in both summer and winter condition. Students are required to prepare a dendrological herbarium.

116. Plant Pathology. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Stover.

Representative bacterial and fungous diseases of horticultural crops are studied in the laboratory. In the lectures, consideration is given to the natural symptoms and control of plant diseases.

120. Field Botany. Three credit hours. Second semester. One field trip and two laboratory hours each week. Prerequisite, Botany 101. Mr. Griggs.

Field and laboratory study of the local flora. A large share of the time is spent in practice in the identification of the plants native to central Ohio.

123. Morphology of Lower Plants. Four credit hours. First semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of algae, fungi, and bryophytes.

124. Morphology of Vascular Plants. Four credit hours. Second semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of ferns and seed plants.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors.

142. Dendrology of Conifers. Two credit hours. Second semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Schaffner.

A general study of conifers including identification, classification and distribution of North American species.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses are not open to freshmen and sophomores.

117-118. Plant Ecology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Transeau.

The ecological relations of the forests, prairies and deserts of North America. Field work on the local plant associations.

121. Plant Genetics. Three credit hours. First semester. One lecture, two laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the principles and methods of plant genetics are considered, including a study of fertilization and reproduction, hybridization, heredity, Mendelian laws, fluctuations and mutations.

127-128. Plant Pathology. Four credit hours. The year. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Stover.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner, Mr. Transeau, Mr. Griggs, Mr. Stover, Miss Detmers, Mr. Sampson.

139-140. Advanced Plant Pathology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 127-128. Mr. Stover.

151. Plant Micro-Chemistry. Three credit hours. First semester. One lecture and four laboratory hours each week. Elective. Prerequisite, Botany 101-102 and one additional year of botanical work. Mr. Sampson.

A study of the chemical substances occurring in plant cells and the chemical changes accompanying plant processes and plant responses.

FOR GRADUATES

201-202. Research in Systematic Botany.

203-204. Research in Morphology and Cytology.

205-206. Research in Physiology and Ecology.

207-208. Research in Mycology and Plant Pathology.

209-210. Seminary in Botany.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON AND W. L. EVANS, ASSISTANT PROFESSORS BOORD AND OLIN, MR. DAY, MR. YOUNG, MR. ADKINS, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Day, Mr. Young, Mr. Adkins, and department assistants.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Day, Mr. Young, Mr. Adkins, and department assistants.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Day, Mr. Young, Mr. Adkins, and department assistants.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105 and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Day, Mr. Young, Mr. Adkins, and department assistants.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures and one quiz each week. Prerequisite, an acceptable course in general chemistry. Mr. Boord.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours each week. Laboratory open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord.

The preparation of typical organic compounds.

CIVIL ENGINEERING

Office, 108 Brown Hall

PROFESSOR ENO, MR. NEILSON, MR. FAEHNLE

131. Surveying. Five credit hours. First semester. Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Neilson, Mr. Faehnle.

133. Sanitation, Drainage, Water Supply. One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSOR STOLTZ

101. Principles of Dairying. Four credit hours. Either semester. Prerequisite to all other courses in dairying. Mr. Stoltz.

Lectures will be given on the relation of dairying to general agriculture; the composition of dairy products and the laws governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. Farm Dairying. Four credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Second semester. Prerequisites, Dairying 101 and Bacteriology 107.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Four credit hours. Either semester. Prerequisite, Dairying 101.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter

and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento and camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice-Cream Making. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures will be given on the theory and practice of ice-cream making. Laboratory work will consist of making ice-cream and other frozen products.

***111. Dairy Mechanics.** Two credit hours. Either semester. Prerequisite, Dairying 101.

This course consists of one lecture hour and one three-hour laboratory period. The construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, pulleys, pipe fitting, and soldering, and the operation of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Two credit hours. The year. Prerequisite, Dairying 101. Mr. Erf.

Two lines of work are offered in this course. First, **Economic Dairying.** This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used. Second, **Investigational Work.** This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

*Not given in 1918-1919.

115. Dairy Buildings. Two credit hours. First semester. Prerequisite, Dairying 101. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint, taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories and refrigerating plants. Must be followed by Agricultural Engineering 114.

116. Milk Condensing. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

121. Dairy Herd Management. Nine credit hours. Either semester. Prerequisite, Dairying 101-102, and permission of the instructor. May be scheduled only by men doing Cow Testing Association work. Mr. Erf.

The work of the course includes visiting not less than twenty herds for at least eight consecutive months. During these visits the milk of each cow is weighed and tested for fat and total solids, weighing feeds and calculating the cost, selecting profitable feeds, calculating feed costs, labor costs and determining other items of expense in order to arrive at the profit or loss of each cow in the herd. Suggestions for increased profits and improving the sanitary conditions must be incorporated in a monthly report.

119-120. Proseminary. One credit hour. The year. Prerequisite, Dairying 101.

Seminary on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

FOR GRADUATES

201-202. Advanced Dairying.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz and one laboratory period each week. First year, Three-Year Course in Agriculture. Mr. Stoltz.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skimmilk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Buttermaking. Three credit hours. Second term.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, Economical Dairying. This consists of visiting five dairy farms,

and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

(See Engineering Drawing)

ECONOMICS AND SOCIOLOGY

Office, 5 Page Hall

PROFESSORS HAGERTY, HAMMOND, LOCKHART, HUNTINGTON, RUGGLES, AND DE HAAS, ASSISTANT PROFESSORS WALRADT, PARRY AND NORTH, MR. DRURY, MISS MARK, MR. McKENZIE, MR. BICE, MR. GEPHART, MR. ECKELBERRY, MR. TAFT, MR. SHEPPARD, MR. THRASHER, MR. WEIDLER, MR. COON, AND DEPARTMENT ASSISTANTS

ECONOMICS

101-102. Principles of Economics. Three credit hours. The year. Not open to first-year students. Should precede all courses in Economics except 131, 133. Concurrent 139. Mr. Hammond, Mr. Lockhart, Mr. Ruggles, Mr. Parry, Mr. Drury, Mr. Bice, Mr. Gephart.

A study of the laws of production, exchange, distribution and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures and individual investigation.

Economics 102 is given also during the first semester. Mr. Valradt.

Economics 101 is given also during the second semester. Mr. Valradt.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102 or Economics 101-102. Miss Mark.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

139. Elements of Accounting. Three credit hours. First semester. Prerequisite, registration in Economics 101-102. Mr. Huntington and assistants.

An introduction to practical accounting, including the preparation and interpretation of business statements.

This course should be followed by Economics 171.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 101-102. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans and financial administrations, currency legislation, and the development of banking institutions.

171. Principles of Accounting. Three credit hours. Second semester. Prerequisite, Economics 139. Mr. Huntington and assistants.

The principles of modern accounting, including a study of some of its problems, especially those connected with the balance sheet and the income statement, as the valuation of assets, and the treatment of good will, depreciation, capital stock, profits, surplus, reserves, etc.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Mr. North, Miss Mark, Mr. McKenzie.

Not open to first-year students.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading and individual investigations.

Sociology 101 is given also during the second semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Mr. McKenzie.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the

family through the Greek, Roman and Medieval periods. The modern family, its functions and its problems.

112. Preventive Philanthropy. Four credit hours. Second semester. Third year, Science Nursing. Mr. Hagerty.

A study of the institutions and methods for the promotion of thrift and good citizenship. Tenement house and child labor legislation, industrial education, social settlements, welfare work, parks and playgrounds, substitutes for the saloon, amusements, sanitation, civic improvements, etc.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN, WILLIAMS, TURNBULL, AND SVENSEN, MR. EAGLE, MR. FIELD, AND DEPARTMENT ASSISTANTS

101. Elementary Mechanical Drawing. Two credit hours. Either semester. Mr. French and department assistants.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Engineering Drawing 101. Lettering, orthographic, isometric and oblique projections. Mr. French and department assistants.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Engineering Drawing 125.

125. Mechanical Drawing. Two credit hours. Either semester. College of Agriculture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester. Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Engineering Drawing 127.

Engineering Drawing 127 and 128 are required in Home Economics, third year.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, GRAVES AND KETCHAM, ASSISTANT
PROFESSORS COOPER, BECK, ANDREWS, AND PERCIVAL,
MR. CRAIG, MR. DISHONG, MR. WILEY, MISS ROBIN-
SON, MR. FOLEY, MISS DOLLINGER, MR. EICH,
MR. GYSAN, AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101, 104. Mr. Beck.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101, 104, 105. Mr. Beck.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor, Mr. Graves, Mr. Andrews. Second semester: Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant and Poe; of Hawthorne, Emerson, Whittier, Longfellow and Lowell; and of Walt Whitman; with a brief survey of recent literature.

141. Nineteenth Century Poetry. Three credit hours. First semester. No prerequisite course. Mr. Taylor, Mr. Cooper, Mr. Andrews.

Wordsworth, Shelley, Keats, and their contemporaries.

145. Nineteenth Century Prose. Three credit hours. First semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

146. Nineteenth Century Prose. Three credit hours. Second semester. No prerequisite course. First year, Science Nursing. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Arnold, Ruskin, Newman, Pater, Stevenson, and in recent and contemporary essayists.

Reading in Coleridge, Lamb, Landor, DeQuincy, Hazlitt and Carlyle.

FOR SHORT COURSES ONLY

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation. Mr. Dishong.

PUBLIC SPEAKING

101. Public Speaking. Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Eich.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

102. Debating. Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Eich.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

ENTOMOLOGY

(See Zoology and Entomology)

EUROPEAN HISTORY

Office, 204 University Hall

PROFESSORS SIEBERT, McNEAL, AND PERKINS, ASSISTANT
PROFESSOR HARRIS, MR. KNIPFING

101. Medieval History. Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

102. Modern History from 1500 A. D. Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris.

FARM CROPS

Office, 101 Horticulture Building

PROFESSORS PARK AND WILLIAMS (non-resident), ASSISTANT
PROFESSOR WILLARD, MR. THATCHER, MR. SCHUER,
AND DEPARTMENT ASSISTANTS

101. Field Crop Production. Four credit hours. Either semester. Three lectures and one laboratory period each week. Prerequisite, Botany 101-102 or equivalent, prerequisite or concurrent, Soils 152. Mr. Willard.

A study of the history, adaptation, culture, uses and distribution of the cereal, forage and miscellaneous crops. Laboratory study of the principal types and varieties.

109. Cereal Crops. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101. Mr. Schuer.

An advanced study of the characters, distribution, production and uses of the principal cereal crops. Emphasis will be placed upon grain standardization and marketing. Lectures, reports, trips and laboratory exercises.

111. Forage Crops. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101. Mr. Willard.

Lectures and recitations on the characters, uses and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification of forage crops and in seed identification.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

113. Plant Breeding. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101 and Zoology 125. Mr. Park.

The application of genetic principles to the improvement of cultivated plants and advanced study of special topics in plant genetics. The technique of breeding certain typical crops.

123. Crop Ecology. Two credit hours. First semester. Two lectures each week. Prerequisite, Farm Crops 101. Mr. Willard.

The relations of our economic plants to their environment. A study of fundamental factors in crop production, and their relation to growth and yield. Investigation of special problems, lectures, reports and assigned readings.

112. Special Crops. Two credit hours. Second semester. Prerequisite, Farm Crops 101. Mr. Schuer.

Chiefly individual study of special crops in which the student may be interested, reports to be presented to the class.

119-120. Minor Investigations. Two to four credit hours. The year. Prerequisite, Farm Crops 101, one advanced course in Farm Crops, and permission of the instructor. Mr. Park, Mr. Willard, Mr. Schuer.

FOR GRADUATES

201-202. Research in Plant Breeding and Crop Production.

203-204. Seminary in Farm Crops.

For description of graduate work in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Crop Production. Four credit hours. The year. Mr. Schuer.

The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

GEOLOGY

Office, 104 Orton Hall

PROFESSORS BOWNOCKER AND CARMAN, ASSISTANT PROFESSORS
HILLS AND TUCKER, MR. VERWIEBE, MR. COTTINGHAM,
MISS MORNINGSTAR

103. Inorganic Geology. Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models and museum materials.

104. Historical Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103. Mr. Carman.

A general course in paleontological and stratigraphical geology, illustrated by lantern views, maps, and specimens. The development of organisms and the classification and distribution of the geological formations, especially those of Ohio, are considered. After the first of April, some of the Friday lectures will be replaced by field trips on Saturdays.

151. Geology. Three credit hours. Either semester. Two recitations or lectures and one two-hour laboratory period each week. Agriculture, first year. Mr. Verwiebe, Mr. Cottingham.

Physical and economic geology. The principles of geology will be presented in the light of their practical bearing upon agriculture. The common rock-forming minerals and rocks and geologic maps are studied in the laboratory; while in the field various illustrations of geological processes are studied.

162. Elementary Physiography. Four credit hours. Second semester.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere and the ocean. Recitations, lectures, map work and field work.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Field Geology. Three to five credit hours. First semester. Prerequisite, Geology 101 or 103 and 104 or 151. Mr. Carman.

Lectures, assigned reading, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

A study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Hills.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Carman.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three credit hours. First semester. Prerequisite, Geology 103 and 104. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin. The coals of the Appalachian field.

GERMAN

Offices, 317 and 318 University Hall

PROFESSORS M. B. EVANS AND EISENLOHR, ASSISTANT PROFESSORS
THOMAS, BARROWS, LEWISOHN, AND BUSEY, MR.
KOTZ, AND DEPARTMENT ASSISTANTS

101-102. Elementary German. Four credit hours. The year.
All instructors.

German 102 is given also during the first semester.

German 101 is given also during the second semester.

103. Intermediate German. Four credit hours. First semester. Prerequisite, German 101-102 or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose and a classical drama supplemented by discussions of syntax; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units in German.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, Advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 202 Botany and Zoology Building

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year. Prerequisite, Psychology 101-102. Mr. Anderson.

Text: Graves's A History of Education (three volumes) and Graves's Great Educators of Three Centuries.

HOME ECONOMICS

Office, 120 Home Economics Building

PROFESSORS WHITE AND VAN METER, ASSISTANT PROFESSOR HATHAWAY, MISS TUCKER, MRS. WALKER, MISS SKINNER, MISS LINDER, MRS. ADAMS, MISS FREEMAN, MISS HESSE AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Two lectures, one quiz, and two laboratory periods each week. Prerequisite, Chemistry 106 or 110. Miss White, Miss Skinner, Miss McGuire.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost and value of the nutrients in the various food materials.

104. Sanitation. Three credit hours. Either semester. Three lectures each week. Prerequisite or concurrent, Bacteriology 107. Miss Linder.

Location and construction of the house, water supply, plumbing, heating, ventilating and lighting. Interdependence of home and public agencies in securing sanitation and hygiene. Special attention is given to emergencies, first aid to the injured, and home nursing.

108. Teaching of Home Economics. Two credit hours. Second semester. Prerequisites, Home Economics 101-102, 111-112, Psychology 101. Miss Van Meter, Miss Hathaway, Mrs. Adams.

This course is designed for students intending to teach home economics. Survey of home economics, examination of courses of study, lesson-plans and study of various types of schools.

111-112. Textiles. Two credit hours. The year. One lecture and one laboratory period each week. Prerequisite or concurrent, Art 119. Mrs. Walker, Miss Tucker, Miss Miller.

The study of fibres and fabrics from an historic, economic and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway, Miss Miller.

The careful selection and combination of materials, the drafting of patterns, and the designing and making of a simple dress.

116. Dress. Three credit hours. Second semester. One lecture and two laboratory periods each week. Miss Hathaway, Miss Miller.

Continuation and amplification of Home Economics 113. Outline of history of costume and continuation of the study of selection and combination of materials in their application to dress.

The lecture may be taken as a one-hour course without the laboratory.

118. The House. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Art 131, Home Economics 112. Home Economics 104, Economics 101, Art 141, either prerequisite or concurrent. Miss Tucker.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. The House. Three credit hours. Either semester. Three lectures each week. Continuation of 118. Prerequisites, Economics 102, Art 141, Home Economics 102, 118, 104 or 110. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

121. Food Problems. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisites, Chemistry 106 or 110, Home Economics 101-102, and consent of instructor. Miss Linder, Miss Skinner.

Problems of markets, fuels, equipment and labor involved in selection, purchase, preparation and serving of food.

123-124. Practice Teaching in Home Economics. Two credit hours. The year. Both semesters must be elected. One lecture and one laboratory period each week. Prerequisite, Home Economics 108. Mrs. Adams.

Observation work, arranging courses of lessons, practice teaching.

125-126. Survey of Home Economics. Three credit hours. The year. One lecture and two laboratory periods each week. Required in curriculum for Public Health Nurses and elective for certain irregular students by consent of instructor. Miss White.

Principles of the selection and preparation of normal low cost dietaries, marketing, feeding of infants, house sanitation, household management, economic and hygienic aspects of textiles and clothing.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Proseminary. Two to five credit hours. First semester. One lecture each week. Prerequisite, eighteen hours of required home economics work. Miss Van Meter.

Readings and reports on home economic topics. Problems assigned for individual research.

106. Proseminary. Two to five credit hours. Second semester. One lecture each week. Continuation of Home Economics 105. Prerequisite, Home Economics 105, and consent of the instructor. Miss Van Meter.

Special research continued. Reports and conferences.

110. Dietetics. Four credit hours. Either semester. Two lectures and two laboratory periods each week. Prerequisite, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Skinner.

A study of the chemical, physiological and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Translation of standard dietaries into food materials and some exercises in making dietary studies and in preparing food for the sick.

FOR GRADUATES

201-202. Research in Home Economics.

For description of graduate course in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture Building

PROFESSORS PADDOCK, MONTGOMERY, AND TAYLOR (non-resident).
ASSISTANT PROFESSORS SCHERER, ELWOOD, HOTTES,
AND ALLEN, AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Three lectures and two laboratory hours each week. Required as a prerequisite for all horticultural courses except 118 and courses numerically listed between 151 and 172. Required of all students specializing in horticulture. Credit cannot be received for this course if the student has already passed Horticulture 118. No prerequisite.

A study of plant growth with special reference to orchard, garden, greenhouse and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all students majoring in Horticulture. Credit cannot be given for this course if Horticulture 118 has been passed. Prerequisite, Horticulture 101.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 101-102. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography, site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106 or equivalent. Mr. Paddock.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticised and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all agricultural students. Not open to students who have credit for Horticulture 101 or 120. Mr. Montgomery.

Vegetable gardening, fruit growing and ornamental planting adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 105, 106.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Prerequisite, Horticulture 101 and 102. Mr. Montgomery.

A study of the history and development of vegetable gardening, the area and extent of the industry, and the several general factors concerned in the production and utilization of vegetables.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. By-Products. Three credit hours. First semester. Prerequisite, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods of the preservation of surplus garden and orchard products. The theory and art of canning, pickling and preserving, the making of kraut, cider, and vinegar is considered from a commercial standpoint.

FLORICULTURE

141-142. Commercial Floriculture. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101, 132. Mr. Hottes.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. The Flower Shop. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations and house decorations, together with the establishment and management of a flower shop.

144. Conservatory and Bedding Plants. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding. The class will participate in a day excursion.

145. Garden Flowers. Three credit hours. First semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The general subject of gardening, especially rose, water and rock gardens with attention given to the propagation and growth of garden annual and perennial flowers as adapted to the florist's trade.

146. School Gardens. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 101. Mr. Hottes.

A course designed to promote the efficiency of school and vacant-lot gardens. Involving a study of plans, materials and culture of flowers and vegetables suitable for school-garden work.

147-148. Systematic Floriculture. Three credit hours. The year. Two lectures and two laboratory hours each week. Mr. Hottes.

A study of the origin, history and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

150. Elementary Landscape Design. Three credit hours. Second semester. One lecture and two laboratory periods each week. Required in the second semester, second year of the curriculum in Landscape Architecture. Mr. Allen.

An elementary study of the principles of landscape design.

151-152. Plant Materials. Two credit hours. The year. Landscape Architecture, second year. Prerequisite, Botany 101-102. One lecture and two laboratory hours each week. Mr. Allen.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year. Mr. Allen.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Open to any student. Recommended for third year students in Floriculture. Mr. Allen.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours each week. Landscape Architecture, third year. Prerequisite, Horticulture 154. Mr. Allen.

This course takes up the general study of practical problems in design, a study of the important works of landscape architecture and the making of finished plans, reports and working-drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Four credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 157-158. Mr. Allen.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152. Mr. Allen.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Allen.

A study of the methods adopted in compiling surveys, especially for landscape use, field practice with instruments.

165. Civic Design. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Allen.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public squares, street intersections, parks and playgrounds.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Allen.

This course covers in detail a study of the various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162. Mr. Allen.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective. Mr. Allen.

172. Proseminary in Landscape. One credit hour. Second semester. Open to fourth-year and graduate students. Mr. Allen.

Discussion of reports from practical landscape problems.

FARM FORESTRY

180. Farm Woodlot. Four credit hours. Either semester. Three lectures with occasional recitations and one three-hour laboratory period each week. Elective. Mr. Scherer.

It is the purpose of this course to show the significance of the forest and its place in farm management, the growth of trees and their identification; the methods of handling woodlands, both natural and artificial; the protection of the forest; the measuring and scaling of trees and logs; the utilization of products and by-products; the preservation of farm timbers, and the influences of the forest.

181-182. Arboriculture and Ornamental Planting. Three credit hours. The year. Two lectures and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will deal with the selection of ornamental trees; the transplanting of large trees; the pruning and shaping of trees; and the care of diseased and injured trees.

This course is especially adapted for students in landscape architecture, agriculture and horticulture.

183. Lumber. Three credit hours. First semester. Two lectures and one three-hour period of laboratory or field work. Elective. Mr. Scherer.

A study of the methods and means of distinguishing woods, both growing and sawed; the cutting and sawing of lumber; grading and seasoning; diseases and the methods of preserving lumber, etc.

This course is especially adapted to the needs of students in manual training, architecture and engineering.

184. Principles of Forestry. Three credit hours. Second semester. Three lectures with occasional recitations. Elective. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry; the problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it,—all serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary for tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Adapted to students of other departments.

FOR GRADUATES

201-202. Research Work.

For description of graduate course in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51.
A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement and care of

trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers and the general culture of the important greenhouse vegetable crops.

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size and arrangement of garden space, seeds, planting and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees

for specific purposes such as wind-brakes, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

INDUSTRIAL ARTS

(See Shopwork)

JOURNALISM

Office, 225 Shop Building

PROFESSORS MYERS AND HOOPER

101-102. News-collecting and News-writing. Three credit hours. The year. Two lectures and three laboratory hours each week. Mr. Myers.

Attention is given to vocabulary and style in the gathering and writing of news for publication in the University daily newspaper, which is organized and operated as nearly like a city newspaper as possible.

Journalism 101 is given also during the second semester.

Journalism 102 is given also during the first semester.

For other courses in this department see the Bulletin of the College of Commerce and Journalism.

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND RASOR, ASSOCIATE PROFESSOR
ARNOLD

107. Mathematics for Students of Agriculture. Three credit hours. Either semester. Mr. Bohannan, Mr. Rasor, Mr. Arnold.

The elements of trigonometry and curve-plotting, numerical computation and algebraic processes germane to agriculture.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Text-book: Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, 104 Hayes Hall

MAJOR CONVERSE, U. S. A., CAPTAIN SMALL, U. S. A., SERGEANTS
MADDEN AND O'ROURKE, MR. BRUDER

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, both special and regular, to drill during two years unless excused by the Military and Gymnasium Board. This work is under two commissioned officers of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

1. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring) military drill; four months, three hours each week (winter) of classroom instruction in drill regulations. Target practice at any

*Not given in 1918-1919.

open hour during the afternoons of the winter months, at 100, 200 and 300 yards. Lecture, one hour each week by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring), in extended order and guard duty, four months, three hours each week (winter) of class-room instruction in Articles of War, guard manual, and field service regulations; target practice at any open hour of the afternoon of the winter months, at 500, 600 and 800 yards.

PHYSICAL EDUCATION

Office, The Gymnasium

PROFESSORS ST. JOHN, WILCE, CASTLEMAN, AND NICHOLS,
MR. OHLSON, MR. TRAUTMAN, MR. BIRD

MEN

101-102. Physical Education. One credit hour. The year. Two hours each week. Required of all first-year students in this college. During the first semester the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

WOMEN

ASSISTANT PROFESSOR MEYER, MISS HAMMETT

131-132. Physical Education. One credit hour. Four hours each week. Required of all women students during first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium Exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

133-134. Physical Education. One credit hour. Four hours each week. Required of all women students. For second-year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE, EARHART, AND BLAKE, ASSISTANT
PROFESSOR HEIL

103-104. General Physics. Four credit hours. The year. Recitations, lectures and laboratory. A non-mathematical course for students who have no entrance credit in physics. Mr. Earhart.

105-106. General Physics. Four credit hours. The year. Prerequisite, entrance credit in physics. Mr. Blake.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture.

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY

Office, 104 Biological Hall

PROFESSORS BROOKS AND BLEILE, ASSISTANT PROFESSORS SEYMOUR AND McPEEK, MR. DURRANT, MR. REED, AND
DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant, Mr. Reed.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including dem-

onstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Physiology 101-102. Mr. Bleile.

A laboratory course with lectures and recitations. The course includes laboratory study of foods, digestion, secretions, excretions and blood with a short period devoted to urinalysis.

135-136. General Physiology. Four credit hours. The year. Two lectures and four laboratory hours each week. Elective. Prerequisite, a general course in chemistry. Not open to freshmen. Mr. Bleile, Mr. Durrant.

A general course in physiology including lecture and laboratory work for students who have had some training in chemistry.

PSYCHOLOGY

Office, 403 University Hall

PROFESSORS ARPS AND PINTNER, ASSISTANT PROFESSORS WEISS AND BRIDGES, MR. EVANS, MR. CRANE, MISS GOUDGE, MR. CULLER, MISS COY, MISS BOWLER, AND DEPARTMENT ASSISTANTS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. All instructors.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

PUBLIC HEALTH AND SANITATION

PROFESSOR McCAMPBELL, ASSISTANT PROFESSORS HAYHURST AND PATERSON, MR. VAN BUSKIRK

SCIENCE NURSING

101. Elementary Nursing. Three credit hours. Summer term following second year of Science Nursing Curriculum. Three lectures each week. Total 36 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Personal hygiene; charts and charting; reception of patients; preparation of patients' rooms; the care and use of equipment;

the care, use and preparation of instruments; the care and handling of patients; bandaging and massage.

102. History and Ethics of Nursing. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Definition; professional ethics; hospital ethics and etiquette; the school uniform; the social life of the student; required reading; the spirit of nursing; and a brief history of nursing.

103. Drugs and Solutions. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum.

Elementary discussion of drugs, their sources, crude forms, and preparation; practical problems in weights and measures; and the preparation of solutions.

104. Hospital Ward Duty. Seven credit hours. Summer term following second year of Science Nursing Curriculum. Seven hours of hospital ward duty each day for six days each week. Total 504 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

The student will serve as a probationer in the wards of the Protestant Hospital.

106. Public Health Nursing. Two credit hours. Second semester. Two lectures or recitations each week. Total 64 hours.

This course takes up the historical development of nursing, the organization of the professional field, and the place of nursing in its relation to the various forms of medico-social and public service. It discusses the best methods of administration as to the supervision and arrangement of practical work, classification and preservation of records and the presentation and publication of reports. This course is intended also to give a general grasp of the problems in nursing to be met in families where there is sickness with poverty; the measures to be followed in various types of families, to preserve unity, to relieve immediate needs and to teach hygiene, preventive methods and

the handling in the home of acute, chronic or contagious illness. The special problems of nursing in medico-social service, industrial welfare and rural districts are considered.

110. Preventive Medicine. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Dr. McCampbell.

The important facts and fundamental principles in preventive medicine are given consideration. The sociological aspects and the methods used in public health work are emphasized. Special attention will be given to the methods and procedures for preventing the occurrence of the communicable diseases as well as the control of this group of diseases. The non-infectious diseases will also be discussed from the standpoint of preventive medicine and the public health.

111. Elements of Pathology. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

A lecture course covering the elementary principles; retrogressive, inflammatory and regenerative reactions of the tissues and the effects of special infectious agents upon the body; tumors.

113. Medical Nursing. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Hygiene of the sick-room, diseases of the blood, of organs of circulation and lymphatics, of organs of respiration, of digestion and of excretion.

115. Surgical Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Principles of septic and anti-septic surgery; fractures; surgical emergencies; pre-operative considerations; post-operative considerations; surgical tuberculosis; tumors; surgical conditions of the head; neck, chest, stomach, gall bladder, intestines, kidney and bladder, and fistulae and plastic surgery.

117. Materia Medica. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Drugs, systems of measurement, the care and use of equipment, administration, solutions; important drugs; the medicine closet.

119. Hospital Ward Duty. Ten credit hours. First semester. Seven hours each day; six days each week. Total 672 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of Science Nursing Curriculum.

A student performs the duties of a nurse in training in the wards of the Protestant Hospital.

122. Pro-seminary in Case Studies. Two credit hours. Second semester. Two conferences each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Assignment to each student of at least six cases embracing medical, surgical, obstetrical, and pediatrial nursing for complete study and the submission of written reports as the basis for class discussion.

123. Hospital Ward Duty. Eight credit hours. Summer term following the third year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first three years of Science Nursing Curriculum.

The student performs the duties of a nurse in the wards of the Protestant Hospital.

124. Public Health Problems. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Dr. McCampbell, Dr. Hayhurst.

This course covers in a rapid survey the health hazards of industrial applications and the accepted standards in regard to the individual and to his environments. Occupational diseases and those diseases partly occupational are considered in their

various relations. The principles of sanitary engineering science, municipal sanitation, and the methods used in the public health laboratory are also covered in this course.

125. Gynecological Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition and brief history of gynecology; diseases of reproductive organs; of the genito-urinary tract; examinations and gynecological operations.

127. Orthopedic Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition; deformities, apparatus used in orthopedic work; care of patients in plaster casts and braces; orthopedic operations.

129. Obstetrical Nursing. Two credit hours. First semester. One lecture and one demonstration each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Mechanism and management of normal labor; after-care of the mother; care and artificial feeding of the new-born infant; physiology and hygiene of pregnancy; pathological pregnancy.

131. Nursing in Diseases of Infants and Children. Two credit hours. First semester. Two lectures each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The normal child; nursing of sick children; diseases of digestive, respiratory, circulatory, nervous and genito-urinary systems; diseases of the blood and lymphatic glands; surgical conditions in children; social aspects of children's diseases.

133. Nursing in Communicable Diseases. Two credit hours. First semester. Two lectures each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Specific infectious diseases; the conduct of a case of communicable disease; diphtheria, cerebrospinal meningitis, acute poliomyelitis, lobar pneumonia, influenza, common colds, follicular tonsillitis, tuberculosis, scarlet fever, measles, chicken pox, whooping cough, mumps, gonococco-vaginitis, syphilis, gonorrhea, erysipelas, smallpox and typhoid fever.

135. Nursing in Diseases of the Eye, Ear, Nose and Throat. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Anatomy and physiology of the head with special reference to the eye, ear, nose and throat; special diseases; methods of examination; methods of treatment; operations; solutions, strength and uses.

137. Operating Room Technic. One credit hour. First semester. One lecture or demonstration each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The operating room; instruments and supplies; preparation for operation; local preparation of patient for operation; and preparation and duties of the nurse.

139. Hospital Ward Duty. Six credit hours. First semester. Four ward duty hours each day; twenty-four each week. Total 102 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The student will perform the duties, in the wards of the Protestant Hospital, of a nurse in training.

141. Hospital Ward Duty. Eight credit hours. Summer term following fourth year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first four years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

ROMANCE LANGUAGES AND LITERATURES

Office, 305 University Hall

PROFESSORS BOWEN, BRUCE, AND INGRAHAM, ASSISTANT PROFESSORS HAMILTON, CHAPIN, AND PEIRCE, MR. CARDON, MR. GUIGOU, MR. GUTIERREZ, MR. RILEY, MR. BERTHEMY, AND DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year. All instructors.

Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies.

Stress is laid first upon the acquisition of a correct pronunciation, after which the entire energy of the student is directed toward the attainment of a full and accurate reading knowledge of the language. Grammar and composition are made to contribute to this end. Sight reading is emphasized.

French 101 is given also during the second semester.

French 102 is given also during the first semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102 or equivalent. Mr. Bruce, Mr. Hamilton, Mr. Chapin, Mr. Peirce, Mr. Cardon, Mr. Guigou, Mr. Berthemy.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

French 103 is given also during the second semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, French 103. Mr. Chapin.

A course of rapid reading introductory to the vocabulary of scientific literature.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. Mr. Ingraham, Mr. Hamilton, Mr. Chapin, Mr. Gutierrez, Mr. Riley, and department assistants.

Grammar: Ingraham-Edgren's and Ingraham's Victoria y Otros Cuentos. Easy prose and plays. Composition and practice in speaking.

Spanish 101 is given also during the second semester.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

103-104. Modern Spanish Literature. Four credit hours. The year. Prerequisite, Spanish 101-102 or equivalent. Mr. Ingraham, Mr. Hamilton, Mr. Chapin.

The modern novel and drama. Lectures covering a survey of the literature. Composition and practice in speaking continued.

RURAL ECONOMICS

Office, 123 Townshend Hall

ASSISTANT PROFESSORS THOMAS D. PHILLIPS, FALCONER
AND ERDMAN, MR. LANTIS

101. Farm Accounting. Two credit hours. Either semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

103. Farm Management. Four credit hours. First semester. For third and fourth year students. Prerequisite, Economics 101. Mr. Falconer, Mr. Phillips.

Lectures, recitations and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Three recitations each week. Prerequisite, Economics 101. For third and fourth year students. Required of all students who are held for a semester's work in Rural Economics.

The economics of agriculture with special reference to the problems of farm management. The economics of the production and marketing of agricultural products, the state and the farmer, the relation of agriculture to other industries and the social relations of agricultural communities are considered.

110. Rural Community Life. Three credit hours. Second semester. Prerequisites, Economics 101 or Sociology 101. Mr. Lantis.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

113. The Distribution of Farm Products. Three credit hours. First semester. Prerequisite, Economics 101. Mr. Erdman.

A study of the distribution of agricultural products, organized methods of marketing, and prices.

116. Cooperation in Agriculture. Two credit hours. Second semester. Two recitations. Prerequisite, Economics 101. Mr. Erdman.

A study of agricultural cooperation, mainly as found in the United States. The types of cooperative marketing, manufacturing and purchasing organizations, collective bargaining, cooperative credit and insurance.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Advanced Farm Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or its equivalent, and Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problems of farm organization and operation.

105. Historical and Comparative Agriculture. Two credit hours. First semester. Prerequisites, Rural Economics 103 and 104. Mr. Falconer.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

111. Advanced Farm Management. One credit hour. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. Reference and assigned work. The study of accumulated farm management data.

114. Land Tenure. Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Falconer.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

118. Rural Community Development. Two credit hours. Second semester. Two recitations. Prerequisite, Economics 101 or Sociology 101 and Rural Economics 104 or its equivalent. Mr. Lantis.

The characteristics of rural people, the opportunities for rural leadership and qualities necessary for it, how to make a rural survey, rural social organizations and various rural social problems are considered. The preparation of written reports on assigned subjects will be required.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing and operating farm lands.

53. Co-operation in Agriculture. Four credit hours. First term.

Lectures and recitations on the co-operative organizations of agriculture. Co-operative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Office, 125 Shop Building

PROFESSOR SANBORN, MR. BEEM, MR. FOUST, MR. DENMAN AND
DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Denman, Mr. Senn.

Practice in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practice work is directly applicable to country life.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire and tools, practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; the making, hardening and tempering of steel punches, drills and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

SOILS

(See Agricultural Chemistry and Soils)

SPANISH

(See Romance Languages)

SURVEY OF AGRICULTURE

Office, 203 Townshend Hall

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester. The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common, sporadic and infectious diseases, minor surgery, castration, horseshoeing and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation

of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS OSBURN AND OSBORN, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSORS BARROWS, KRECKER AND METCALF,
MR. KOSTIR, MR. DE LONG, AND DEPARTMENT ASSISTANTS

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osburn, Mr. Barrows, Mr. Kreckler, Mr. Kostir, Mr. De Long, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

Zoology 101 is given also in the second semester.

115. General Principles of Heredity. Three credit hours. Either semester. Three lecture periods. Elective. Prerequisite, Zoology 101-102 or Botany 101-102 or equivalent. Mr. Barrows.

A study of heredity in animals and plants, to serve as an introduction to heredity, as a basis for advanced work in plant and animal breeding and as an aid in the analysis of biological and sociological problems into which the question of heredity enters. The subject will be presented in lectures, illustrated with lantern slides and actual specimens. Exercises in the form of problems will be assigned. The different types of heredity studied will be chosen from the animal and plant material which best illustrates the subject. Hereditary characters found in man will be used to a large extent. The course will be made as

simple and practical as the subject will permit. Present day theories and technical applications will be left for discussion in the more advanced courses to which they properly belong.

121-122. Advanced Zoology of Invertebrates. Three credit hours. The year. One lecture and two laboratory periods. Elective. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits and relationships of invertebrate animals together with the consideration of important biological principles. Lectures, laboratory exercises, and occasional field trips.

123. Microtechnic. Two credit hours. First semester. Two laboratory periods. Elective. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A course in the theory and practice of microscopic methods, including fixing, embedding, sectioning and staining of animal tissues, making permanent preparations, and special manipulation of microscopic accessories. Laboratory work, assigned readings and conferences.

This course is designed for students intending to major in Zoology or those intending to teach in secondary schools.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

124. Animal Tissues. Two credit hours. Second semester. Two laboratory periods. Elective. Prerequisite, Zoology 121-122 or equivalent. Mr. Osburn, Mr. Kostir.

A comprehensive study of the origin and evolution of different types of cells and tissues in the animal kingdom. Dahlgren and Kepner's Principles of Animal Histology will be used as a guide. Laboratory work, assigned readings and conferences.

129-130. Advanced Studies in Animal Heredity. Two to three credit hours. The year. Prerequisite, Zoology 125. Mr. Barrows.

Part of this course will be devoted to the study of recent advances in the field of animal heredity but a large part of the work will consist in the breeding of animals in the laboratory and the analysis of data collected.

153-154. Quantitative Studies in Animal Behavior. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Barrows.

Devoted especially to insects. Required in the four-year course in Entomology. Elective to other students.

158. Animal Parasitology. Three credit hours. Second semester. Prerequisite, Zoology 101-102, 121-122, or equivalent or concurrent with 122. Mr. Krecker.

A consideration from the zoological standpoint of the parasitic forms in all animal phyla, exclusive of insects (for which see Entomology 149) effects upon the host and the origin of parasitism. Laboratory studies of parasites and their life histories.

159-160. Animal Ecology. Three to five credit hours. The year. One lecture and laboratory periods governed by the number of hours of course scheduled. Prerequisite, Zoology 101-102 and one additional year of a biological science. Mr. Krecker.

A study of animals in their habitats and of the factors involved. Field work, lectures and laboratory.

FOR GRADUATES

201-202. Seminary in Zoology.

223-224. Invertebrate Embryology.

241-242. Research Work.

247-248. Invertebrate Zoology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102, or equivalent. Mr. Metcalf and assistants.

An elementary course on structure, physiology, development and habits of insects, as a basis for insect control and for special study in entomology; followed by a general systematic survey of insects, mites and ticks with special attention to beneficial species and those injurious to farm, orchard, garden, forest, household, mill and storehouse and the health of man and domestic animals.

Lectures, quizzes, problems and laboratory work on general anatomy, life-stages, field observations of habits and damage and the preparation and application of remedial measures. Students are required to prepare a collection. Those desiring to collect specimens in advance should get printed instructions from the department.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

A consideration of the various subdivisions of entomology, including phylogeny, classification, anatomy, physiology, embryology, metamorphosis, adaptation, behavior, distribution, dispersal, biological, and ecological relations, remedial and preventive measures.

Laboratory and field studies of life-histories, collection and classification, greenhouse pests, scale insects and other special groups; with practice in making notes on observations, keeping records, planning and conducting an investigation and preparing manuscript and illustrations for publication.

Adapted for students intending to undertake investigation or teaching in entomology.

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each student of report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Osburn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of a selected group or groups of insects.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite, one year of entomology. Mr. Metcalf.

Lectures, reading, field work and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

151-152. Insect Control. Three credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

Principles of economic entomology, utilization of parasitic and predaceous forms, entomophagous fungi and bacteria, circumvention and exclusion, cultural methods, traps and trap crops, heat, animal dips, insecticides, insecticide machinery and accessories and practical work in fumigation, spraying, inspecting, rearing and insectary methods. Practical course intended to anticipate, so far as possible, the requirements and difficulties which the student will encounter in state or federal entomological work.

Entomology 151 is not prerequisite to 152.

149. Medical Entomology. Three to five credit hours. First semester. Prerequisites, Zoology 101-102 and 121-122, or Entomology 107-108, or equivalents. Mr. Metcalf.

Lectures, demonstrations and recitations upon the insects, mites, and ticks concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation and health.

The student is advised if possible to precede this course with Zoology 158.

162. Morphology and Development of Insects. Four credit hours. Second semester. Prerequisites, Zoology 101-102 and Entomology 107-108 and 113-114 or equivalent.

An advanced course taking up in a comprehensive way the morphology, embryology, histology and histogenesis of insects. May be taken concurrently with Entomology 114.

FOR GRADUATES

201-202. Seminary in Entomology.

241-242. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

TIME SCHEDULE

COLLEGE OF AGRICULTURE

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

Key to Abbreviations

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Hall
- Ha.—Hayes Hall
- H. E.—Home Economics Building
- H. F.—Horticulture and Forestry Building
- L.—Library
- Lo.—Lord Hall
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- S.—Shop Building
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY AND SOILS

Agricultural Chemistry

Course No.	Hours	Time	Room	Instructor
103—	5	L., M., W., at 8 M., W., at 1 Q., F., at 8 F., at 1 Lab., Tu., Th., 8 to 11 M., W., 1 to 4	T. 205 T. 205 T. 205, 204, 200 T. 205, 204, 200 T. 210 T. 210	Phillips
111—112	2 to 4	Tu., Th., at 11 Lab., Tu., Th., 1 to 4	T. 205	Lyman
—113	2	F., at 3; F., 9 to 12	T. 204	Phillips
—114	2	To be arranged		Phillips
115—	3	L., M., at 11 Lab., M., W., 8 to 11 Tu., Th., 8 to 11 M., W., 1 to 4 Tu., Th., 1 to 4	T. 205	Phillips
—116	2	To be arranged		Phillips
121—122	3 to 5	L., Th., at 4 Lab., to be arranged	T. 205	Lyman
—123	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 Tu., Th., 1 to 4	T. 205 T. 205 T. 205 T. 205 T. 210 T. 210	Lyman, Phillips
124—	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 Tu., Th., 1 to 4	T. 205 T. 205 T. 205 T. 205 T. 210 T. 210	Lyman, Phillips
125—126	4	L., Tu., Th., at 10 Lab., Tu., Th., 1 to 4	T. 204	Lyman
201—202	5 to 10	To be arranged	T.	Lyman

For Short Courses Only

51—52	4	L., M., W., F., at 9 M., W., F., at 2 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 Th., 1 to 3	T. 205 T. 205	
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Soils

—152	5	L., M., W., at 8 M., W., at 1	T. 205 T. 205	Vivian
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AGRICULTURAL CHEMISTRY AND SOILS—Continued

Course No.	Hours	Time	Room	Instructor
		Q., F., at 8	T. 205, 204, 200	
		F., at 1	T. 205, 204, 200	
		Lab., Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
153—154	2	Tu., Th., at 9	T. 204	Bear
155—156	3	L., Tu., at 10	T. 205	McClure
		Lab., to be arranged	T.	
157—158	3	M., W., 10; Th., 1 to 4	T. 205	Bear, Conrey
159—160	1	To be arranged		Bear
161—162	1 or 4	To be arranged		Bear
201—202	3 to 10	To be arranged	T.	Bear
203—204	1	To be arranged		Bear

For Short Courses Only

53—54	3	M., W., F., at 3	T. 205
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AGRICULTURAL EDUCATION

101—101	3	M., Tu., W., at 4	T. 106	Stewart
103—104	2	To be arranged		Stewart

AGRICULTURAL ENGINEERING

101—	4	M., W., F., at 3	H. E. 321	Ramsower, Potter
		Lab., Tu., 8 to 11		
		W., 8 to 11		
		Th., 8 to 11		
—101	4	M., Th., F., at 11	H. E. 321	Ramsower, Potter
		Lab., Tu., 1 to 4		
		W., 1 to 4		
		Th., 1 to 4		
103—	3	W., F., 1 to 4	H. E. 304	Ives
—106	3	Tu., Th., 1 to 4	H. E. 321	All Instruc- tors
—107	4	Tu., Th., at 8	H. E. 102	McCuen
		Lab., F., 1 to 4; S., 8 to 11		
		Tu., Th., 1 to 4		
—108	3	Tu., Th., at 8; M., 1 to 4	H. E. 321	Potter
110—	3	F., 1 to 4; S., 8 to 11	H. E.	McCuen
111—112	2 to 5	To be arranged		
—114	2	W., F., 1 to 4	H. E. 304	Ives

For Short Courses Only

51—	4	Tu., Th., at 9	H. E. 102	Ives
		Lab., F., 1 to 4		
		M., 1 to 4		

AGRICULTURAL ENGINEERING—Continued

Course No.	Hours	Time	Room	Instructor
—51	4	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	H. E. 321	Ives
52—	4	M., W., F., at 10 Lab., F., 8 to 10	H. E. 102	Ramsower, Potter
—52	4	M., Th., F., at 10 Lab., M., 8 to 10		
53—	3	M., F., at 10 M., 1 to 4 S., 8 to 11	T. 106	Ives
—54	4	M., W., F., at 10 M., 1 to 4 W., 1 to 4	H. E. 102	McCuen

AGRICULTURAL EXTENSION

—102	2	To be arranged		Wheeler
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AMERICAN HISTORY

101—102	3	M., W., F., at 8	U. 205	Wood
		M., W., F., at 8	U. 209	Wittke
		M., W., F., at 9	U. 205	Hockett
		M., W., F., at 9	L. 107	Schlesinger
		M., W., F., at 10	U. 209	Wittke
		M., W., F., at 10	L. 107	Schlesinger
		M., W., F., at 1	U. 205	Hockett
		M., W., F., at 1	U. 209	Wood
		M., W., F., at 2	U. 205	Wittke
		M., W., F., at 3	U. 209	Wood
		M., W., F., at 4	U. 205	Wittke
—101	3	M., W., F., at 2	U. 205	Wittke

ANATOMY

101—102	3 or 5	L., W., at 1 Lab., W., Th., F., 1 to 4	Bio. 102	Baker
103—104	3 to 5	L., Tu., at 1 Lab., W., Th., F., 1 to 4	Bio. 107	Landacre
105—106	3 to 5	To be arranged	Bio. 102	Baker
—116	3	To be arranged		
—118	3 to 5	L., Tu., at 8	Bio. 100	Landacre
	(pre-med)	Th., at 1	Bio. 102	Baker
		Lab., { Tu., 9 to 11 { Th., 8 to 11 { Tu., 1 to 4 { Th., 2 to 4		
		For 5 hrs. credit F., 1 to 4 additional		

ANIMAL HUSBANDRY

Course No.	Hours	Time	Room	Instructor
117—118	3	Tu., Th., at 8 Lab., Th., 1 to 3 F., 1 to 3	Pav.	Jacoby
119—	2	M., W., at 9	Pav.	Jacoby
—120	1	To be arranged	Pav.	Jacoby
—121	1	F., at 11	Pav.	Jacoby
—122	1	To be arranged	Pav.	Jacoby
—124	2	M., W., 1 to 3	Pav.	Jacoby
—132	3	Tu., Th., at 3 Lab., Th., 1 to 3		Kays
133—	3	Tu., Th., at 2; F., at 1	Pav.	
135—	4	L., M., W., F., at 4 Lab., Tu., 8 to 10 Th., 8 to 10	Pav.	Coffey
—135	4	L., M., W., F., at 10 Lab., M., 1 to 3 W., 1 to 3	Pav.	Coffey
137—	3	M., W., F., at 9	Pav.	Kays
—137	3	M., W., F., at 3	Pav.	Conklin
139—	3	L., Tu., Th., at 9 Lab., W., 1 to 3	Pav.	Kays
141—	3	L., Tu., Th., at 11 Lab., Tu., 1 to 3	Pav.	Conklin
—143	3	L., Tu., Th., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	Pav.	Coffey
—145	3	L., M., W., at 8 Lab., Th., 1 to 3	Pav.	Plumb
—147	3	L., Tu., Th., at 11 Lab., W., 1 to 3	Pav.	Stone
149—	4	L., M., W., F., at 10 Lab., W., 1 to 3	Pav.	Plumb
151—	3	Th., 1 to 4 F., 1 to 4	Pav.	Kays
—153	3	L., Tu., Th., at 8 Lab., Tu., 1 to 3	Pav.	Conklin
155—	3	M., Th., F., at 11	Pav.	Plumb
—157	4	L., M., W., F., at 10 Lab., M., 1 to 3 W., 1 to 3	Pav.	Kays
—159	3	L., M., Th., F., at 11	Pav.	Plumb
—161	2	F., 1 to 4	Pav.	Kays
163—164	2 to 5	To be arranged		
201—202		To be arranged	Pav.	Plumb
For Short Courses Only				
51—52	4	M., W., F., at 8 M., W., F., at 3	Pav. Pav.	Stone Stone

ANIMAL HUSBANDRY—Continued

Course No.	Hours	Time	Room	Instructor
		Lab., Tu., 8 to 10		
		Tu., 1 to 3		
		Th., 8 to 10		
		F., 1 to 3		
53—	4	M., W., F., at 10	Pav.	Conklin
		Lab., M., 1 to 3		
54—54	4	M., Tu., Th., F., at 11	Pav.	Stone
—56	4	M., W., F., at 9	Pav.	Conklin
		Lab., Th., 1 to 3		
57—	4	M., W., F., at 9	Pav.	Coffey
		Lab., Th., 1 to 3		
59—60	3	Tu., Th., at 10	Pav.	Jacoby
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
		F., 1 to 3		

ARCHITECTURE

111—	2	W., Th., 1 to 4	Br. 1	Haskett
		F., S., 8 to 11	Br. 1	Haskett
—111	2	M., Tu., 1 to 4	Br. 1	Haskett
		Th., F., 1 to 4	Br. 1	Haskett
113—	2	Tu., Th., at 3	Br. 104	Chubb
131—132	2	M., W., 8 to 11	Br. 103	Ronan
		W., F., 1 to 4	Br. 103	
133—134	3	M., W., F., at 2	Br. 109	Chubb
—136	3	M., W., F., at 3	Br. 104	Chubb

ART

119—119	1	M., at 4	H. E. 200	Kelley
121—	2	Tu., Th., 9 to 11	H. F. 206	Talbot
—131	2	Tu., Th., 1 to 3	H. F. 206	Talbot
131—	2	M., W., 8 to 10	H. F. 206	Norris
		M., W., 1 to 3	H. F. 206	Talbot
		Tu., Th., 8 to 10	H. F. 206	Christensen,
				Norris
		Tu., Th., 1 to 3	H. F. 206	Robinson,
				Christensen
—131	2	Tu., Th., 8 to 10	H. F. 206	Norris
132—	2	M., W., 1 to 3	H. F. 206	Kelley
—132	2	Tu., Th., 8 to 10	H. F. 206	Christensen
		M., W., 9 to 11	H. F. 206	Norris
133—	2	M., W., 9 to 11	H. F. 206	Norris
		W., F., 9 to 11	H. F. 206	Robinson
—133	2	Tu., Th., 2 to 4	H. F. 206	Robinson
134—134	3	Tu., Th., 8 to 11	H. F. 206	Kelley

ART—Continued

Course No.	Hours	Time	Room	Instructor
135—135	4	Tu., Th., 1 to 4	H. F. 206	Norris
136—	2	Tu., Th., 8 to 10	H. F. 206	Robinson
—136	2	M., W., 9 to 11	H. F. 206	Robinson
		Tu., Th., 9 to 11	H. F. 206	Robinson
—137	3	M., W., 8 to 11	H. F. 206	Robinson
138—	3	To be arranged	H. F. 206	Kelley
—139	3	To be arranged	H. F.	Kelley
141—	2	Tu., Th., at 10	H. F. 204	Christensen
—141	2	Tu., Th., at 8	H. F. 204	Robinson
		Tu., Th., at 10	H. F. 204	Talbot
		Tu., Th., at 1	H. F. 204	Christensen
		Tu., Th., at 3	H. F. 204	Christensen
142—	3	M., W., 8 to 10	H. F. 206	Talbot

BACTERIOLOGY

107—	4 or 5	L., M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 101	Morrey
		Tu., Th., at 9	V. L. 101	Morrey
		Lab., Tu., Th., 8 to 11	V. L. 8, 201, 205	Starin, Masters, Froning
		Tu., Th., 1 to 4	V. L. 8	Froning
		M., W., 8 to 11	V. L. 201, 205	Masters, Froning
		M., W., 1 to 4	V. L. 8	Froning
—108	2 to 5	L., M., W., at 9	V. L. 102	Morrey
		M., W., at 2	V. L. 102	Morrey
		Lab., M., W., 8 to 11	V. L. 205	Froning
		M., W., 1 to 4	V. L. 205	Froning
		M., 1 to 4; S., 8 to 11	V. L. 205	Froning
—110	2 to 5	L., Tu., Th., at 9	V. L. 102	Morrey
		Lab., to be arranged		Morrey, Masters
—112	2 to 5	L., Tu., Th., at 10	V. L. 102	Morrey
		Lab., to be arranged		Morrey, Masters
121—122	3 to 5	To be arranged		Morrey
123—124	3 to 5	To be arranged		Morrey

For Short Courses Only

51—	4	M., Tu., Th., F., at 11	V. L. 102	Morrey
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BIBLICAL LITERATURE

101—102	3	M., Th., F., at 11	H. E. 218	Breyfogle
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BIBLIOGRAPHY

Course No.	Hours	Time	Room	Instructor
101—102	1	Tu., at 3	Li. 107	Jones
103—	½	Th., at 3	Li. 107	Reeder
		F., at 11	Li. 107	Reeder
105—	2	M., W., at 4	Li. 107	Reeder

BOTANY

101—102	3	L., M., W., at 8	B. Z. 109, 110	Sampson,
		M., W., at 9	B. Z. 208, 109	Griggs,
		M., W., at 10	B. Z. 109, 110	Stover,
		M., W., at 1	B. Z. 109, 208	Detmers
		M., W., at 2	B. Z. 110, 208	
		M., W., at 3	B. Z. 110, 208	
		Lab., Tu., 8 to 10	B. Z. 108	
		Tu., 1 to 3	B. Z. 108	
		W., 8 to 10	B. Z. 108	
		W., 1 to 3	B. Z. 108	
		Th., 8 to 10	B. Z. 108	
		Th., 1 to 3	B. Z. 108	
		F., 8 to 10	B. Z. 108	
		F., 1 to 3	B. Z. 108	
107—108	2	To be arranged	B. Z. 108	Detmers
110—	2	W., 1 to 4	B. Z. 108	Griggs
—116	3	L., M., W., at 10	B. Z. 208	Stover
		Lab., F., 10 to 12	B. Z. 206	
117—118	3	L., Tu., at 9	B. Z. 110	Transeau
		Lab., W., 1 to 5	B. Z. 66	
—120	3	S. and M. arranged	B. Z. 210	Griggs
121—	3	L., W., at 1	B. Z. 110	Schaffner
		Lab., W., 2 to 4	B. Z. 62	
123—124	4	L., Tu., Th., at 10	B. Z. 208	Griggs
		Lab., to be arranged	B. Z.	
125—126	4	L., Tu., Th., at 8	B. Z. 109	Transeau
		Lab., Tu., Th., 1 to 3	B. Z. 112	
		Tu., Th., 3 to 5	B. Z. 112	
127—128	4	L., Tu., Th., at 11	B. Z. 110	Stover
		Lab., M., W., 8 to 10	B. Z. 210	
129—130	3 to 5	M., 1 to 4; other hours arranged	B. Z. 60	Schaffner
133—134	3 to 5	To be arranged		All Instructors
135—136	1	Tu., at 4	B. Z. 110	Schaffner
137—138	1	M., at 4	B. Z. 110	Schaffner
139—140	3	To be arranged	B. Z. 210	Stover
—142	2	Th., 1 to 4	B. Z. 62	Schaffner
—150	3	M., at 9; W., 9 to 11	B. Z. 110, 112	Transeau
151—	3	To be arranged	B. Z.	Sampson
201—202	3 to 10	To be arranged	B. Z. 104	Schaffner, Griggs

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
203—204	4 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
205—206	4 to 10	To be arranged	B. Z. 112	Transeau
207—208	3 to 10	To be arranged	B. Z. 210	Griggs, Stover
209—210	1	To be arranged	B. Z.	Schaffner

For Short Courses Only

91—	4	M., W., at 8	B. Z. 208	Stover
		Lab., Tu., Th., 1 to 3	B. Z. 206	

CHEMISTRY

101—102	4	To be arranged		
105—106	4	L., M., at 8	Ch. 200	Day, and De- partment Assistants
		W., at 9	Ch. 200	
		M., at 1	Ch. 200	
		W., at 2	Ch. 200	
		Q., W., at 8	Ch. 101, 302	
		F., at 8	Ch. 302	
		F., at 9	Ch. 101, 302	
		F., at 11	Ch. 302	
		W., at 1	Ch. 101, 302	
		F., at 1	Ch. 101, 302	
		F., at 2	Ch. 101, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
—105	4	Tu., W., Th., at 4; S., 8 to 12	Ch. 207	
109—110	4	L., F., at 10	Ch. 200	Day, and De- partment Assistants
		F., at 3	Ch. 200	
		Q., M., at 10	Ch. 207	
		M., at 3	Ch. 101, 302	
		W., at 10	Ch. 101, 207	
		W., at 3	Ch. 101, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
—109	4	Tu., W., Th., at 4; S., 8 to 12	Ch. 101	
127—	4	M., Tu., Th., F., at 11	Ch. 200	Boord
151—152	2	Tu., Th., at 8	Ch. 200	
153—154	2 or 3	Laboratory open afternoons		Boord

CIVIL ENGINEERING

Course No.	Hours	Time	Room	Instructor
131—	5	M., W., F., at 10 M., Tu., 1 to 4	Br. 1	Neilson
133—	1	Tu., at 11	Br. 1	Eno

DAIRYING

101—	4	M., W., F., at 10 Lab., Tu., 1 to 4 F., 1 to 4	T. 200 T. 3, 5, 10 T. 3, 5, 10	Stoltz
—101	4	M., W., F., at 4 Lab., Tu., 8 to 11 F., 8 to 11	T. 200 T. 3, 5, 10 T. 3, 5, 10	Stoltz
—102	4	M., W., F., at 10 Lab., Th., 1 to 4	T. 200 T. 3, 5, 10	Erf, Stoltz
—103	2 to 4	Tu., at 11 Lab., to be arranged	T. 200	
—104	2	To be arranged		
105—105	4	L., to be arranged Lab., M., or Th., 2 to 5 and Tu., or F., 8 to 10		
107—107	3	Tu., at 4 Lab., M., 1 to 5 W., 1 to 5	T. 200 T. 3, 5, 10	Stoltz
—110	2	F., at 11; S., 8 to 12	T. 200	
113—114	2	To be arranged		Erf
115—	2	Tu., Th., at 11	T. 204	Erf
—116	2	M., at 11 Lab., to be arranged	T. 124	Erf
119—120	1	To be arranged		
121—121	9	To be arranged		Erf
201—202	5 to 10	To be arranged		Erf

For Short Courses Only

52—	3	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	T. 200	Stoltz
—52	3	Tu., Th., at 9 Lab., M., 1 to 4 W., 1 to 4	T. 200	Stoltz
53—53	3	Tu., Th., at 3 Lab., W., 8 to 11 Th., 8 to 11	T. 106	Erf, Stoltz
55—	3	To be arranged		Stoltz
—56	3	To be arranged		
57—58	3	To be arranged		Erf

ECONOMICS AND SOCIOLOGY

Economics

Course No.	Hours	Time	Room	Instructor
101—102	3	M., W., F., at 8	P. 12	Bice
		M., W., F., at 8	P. 13	Drury
		M., W., F., at 9	P. 12	Lockhart
		M., W., F., at 9	P. 13	Ruggles
		M., W., F., at 10	P. 12	Hammond
		M., W., F., at 10	P. 13	Drury
		M., Th., F., at 11	P. 12	
		M., W., F., at 1	P. 12	Gephart
		M., W., F., at 1	P. 13	Drury
		M., W., F., at 2	P. 12	Parry
		M., W., F., at 3	P. 12	Gephart
—101	3	M., W., F., at 8	P. 7	
		M., W., F., at 3	P. 9	Walradt
102—	3	M., W., F., at 2	P. 13	
139—	3	L., Tu., Th., at 8	P. 10	
		Tu., Th., at 9	P. 10	
		Tu., Th., at 9	P. 7	
		Tu., Th., at 10	P. 10	
		Tu., Th., at 1	P. 10	
		Tu., Th., at 1	P. 7	
		Tu., Th., at 2	P. 10	
		Tu., Th., at 3	P. 10	
		Lab., M., 8 to 10	P. 11	
		Tu., 10 to 12	P. 11	
		W., 8 to 10	P. 11	
		F., 8 to 10	P. 11	
		M., 1 to 3	P. 11	
		Tu., 1 to 3	P. 11	
		W., 1 to 3	P. 11	
		F., 1 to 3	P. 11	
—139	3	Tu., Th., at 1; Th., 8 to 10	P. 6, 11	
147—148	2	Tu., Th., at 1	P. 13	Walradt
—171	3	Tu., Th., at 8	P. 10	
		Tu., Th., at 9	P. 7	
		Tu., Th., at 10	P. 10	
		Tu., Th., at 1	P. 10	
		Tu., Th., at 1	P. 7	
		Tu., Th., at 2	P. 10	
		Tu., Th., at 3	P. 10	
		Lab., M., 8 to 10	P. 11	
		Tu., 10 to 12	P. 11	
		W., 8 to 10	P. 11	
		F., 8 to 10	P. 11	
		M., 1 to 3	P. 11	

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., 1 to 3	P. 11	
		W., 1 to 3	P. 11	
		F., 1 to 3	P. 11	
Sociology				
101—102	3	M., W., F., at 8	P. 10	North
		M., W., F., at 9	Li. 307	
		M., W., F., at 10	P. 6	
		M., Tu., F., at 11	P. 7	
		M., W., F., at 1	P. 7	Mark
		M., W., F., at 2	P. 10	McKenzie
		M., W., F., at 3	P. 10	Bice
102—101	3	M., W., F., at 3	P. 13	
107—	3	M., W., F., at 2	L. 107	McKenzie
—112	4	M., W., F., at 8	P. 9	Hagerty
		Lab., S., 9 to 12		

ENGINEERING DRAWING

101—	2	M., W., 8 to 10	Br. 203	All Instruc-
		M., W., 1 to 3	Br. 203, 200	tors
		Tu., Th., 8 to 10	H. F.	
		Tu., Th., 1 to 3	Br. 203, 200	
		F., S., 8 to 10	Br. 104	
—101	2	F., S., 8 to 10		
102—	3	M., at 8	Br. 200	
		M., 9 to 11; Tu., 8 to 10		
—102	3	L., M., at 2	Br. 203, 1	All Instruc-
		M., at 9	Br. 203	tors
		W., at 10	Br. 203, 200	
		W., at 3	Br. 203	
		F., at 8	Br. 203, 200	
		F., at 10	Br. 200, 104	
		F., at 1	Br. 203, 200	
		F., at 2	Br. 104, 200, 1	
		F., at 3	Br. 203	
		Lab., M., W., 8 to 10	Br.	
		M., W., 1 to 3	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		F., S., 8 to 10	Br.	
108—	3	Tu., Th., at 8; Th., 1 to 4	Br. 200	French
125—125	2	L., Tu., at 1	Br. 104	French
		Th., at 9	Br. 104	Meiklejohn
		Th., at 1	Br. 104	Withrow
		F., at 10	Br. 203	Batesole

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
		Lab., W., 8 to 11	Br.	
		W., 1 to 4	Br.	
		F., 8 to 11	Br.	
		F., 1 to 4	Br.	
127—	1½	S., 8 to 11	Br. 203	French,
				Turnbull
—128	1½	S., 8 to 11	Br. 203	French

ENGLISH

101—104	2	Tu., Th., at 8	Ph. 202, 104, 204, 302	
		Tu., Th., at 9	Ph. 202, 104, 102	
		Tu., Th., at 10	U. 312, P. 7, 12	
		Tu., Th., at 11	Ph. 202	
		Tu., Th., at 1	Ph. 202, 104, 204	
		Tu., Th., at 2	Ph. 102, 104 P. 9, P. 13	
		Tu., Th., at 3	Ph. 202, 104, 302, 204	
		Tu., Th., at 4	Ph. 104	
104—101	2	Tu., Th., at 8	Ph. 102	
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 4	Ph. 102	
105—106	2	Tu., Th., at 10	Ph. 104	Beck
133—133	3	M., W., F., at 10	Ph. 104	Taylor
		M., W., F., at 3	Ph. 302	Graves
141—142	3	M., W., F., at 9	Ph. 102	Taylor
		M., W., F., at 10	Ph. 304	Cooper
		M., W., F., at 1	Ph. 102	Cooper
		M., W., F., at 3	Ph. 303	Percival
145—146	3	M., W., F., at 8	Ph. 204	Percival
		M., W., F., at 10	Ph. 204	Beck
		M., W., F., at 1	Ph. 204	McKnight
		M., W., F., at 2	Ph. 302	Graves

For Short Courses Only

91—92	2	Tu., Th., at 8	Ph. 5	Dishong
		Tu., Th., at 10	Ph. 5	Dishong
		Tu., Th., at 2	Ph. 5	Dishong
		Tu., Th., at 3	Ph. 5	Dishong

EUROPEAN HISTORY

101—102	3	M., W., F., at 8	U. 201	All Instruc-
		M., W., F., at 8	U. 316	tors
		M., W., F., at 9	U. 201	

EUROPEAN HISTORY—Continued

Course No.	Hours	Time	Room	Instructor
		M., W., F., at 10	U. 201	
		M., W., F., at 1	U. 201	
		M., W., F., at 1	U. 202	
		M., W., F., at 2	U. 201	
		M., W., F., at 3	U. 201	
		M., W., F., at 4	U. 201	

FARM CROPS

101—	4	M., Th., F., at 11	H. F. 108	
		Lab., Th., 1 to 3	H. F.	
		F., 1 to 3	H. F.	
—101	4	M., W., F., at 3	H. F. 108	
		Lab., Th., 8 to 10	H. F.	
		F., 8 to 10	H. F.	
109—	3	Tu., Th., at 10; M., 1 to 3	H. F. 112	Schuer
—111	3	Tu., Th., at 10	H. F. 112	Willard
		M., 1 to 3	H. F.	
—112	2	To be arranged	H. F.	Schuer
113—	3	Tu., Th., at 10; W., 1 to 4	H. F.	Park
119—120	2 to 4	To be arranged	H. F.	Park
123—	2	To be arranged		Willard
201—202	5 to 10	To be arranged		Park
203—204	1	To be arranged		Park

For Short Courses Only

51—52	4	M., W., F., at 2	H. F. 108	Schuer
		Lab., M., 8 to 10		
		Tu., 8 to 10		
		W., 8 to 10		
		F., 8 to 10		

GEOLOGY

103—	3	M., W., F., at 10	O. 105	Bownocker
—104	3	M., W., F., at 10	O. 105	Carman
105—	3 to 5	To be arranged; field trips Saturday		Carman
—106	3	To be arranged; field trips Saturday		Hills
107—108	2 to 5	To be arranged		Carman
151—151	Agr. 3	L., Tu., Th., at 8	O. 105, 2nd sem. 1	Verwiebe
		Tu., Th., at 9	O. 105	
		Tu., Th., at 10	O. 1, 2nd sem. 105	Verwiebe

GEOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., at 1	O. 105, 2nd sem. 1	Verwiebe
		Tu., Th., at 2	O. 105	Verwiebe
		Tu., Th., at 3	O. 105	Cottingham
		Lab., W., 8 to 10	O.	Verwiebe
		W., 1 to 3	O.	Verwiebe
		F., 8 to 10	O.	Verwiebe
		F., 10 to 12	O.	Cottingham
		F., 1 to 3	O.	Verwiebe
—162	4	M., W., F., at 9	O. 105	
167—	3	M., W., F., at 8	O. 105	Bownocker

GERMAN

101—102	4	M., Tu., W., Th., at 10	U. 320	Evans
		M., Tu., W., Th., at 1	U. 320	Thomas
—101	4	M., Tu., W., Th., at 3	U. 320	Thomas
102—103	4	M., Tu., W., Th., at 8	U. 320	Eisenlohr
103—104	4	M., Tu., W., Th., at 9	U. 320	Busey
104—	4	M., Tu., W., Th., at 3	U. 320	Thomas
103—106	4	M., Tu., W., Th., at 10	U. 319	Eisenlohr
		M., Tu., W., Th., at 1	U. 319	Busey
		M., Tu., W., Th., at 4	U. 320	Thomas

HISTORY AND PHILOSOPHY OF EDUCATION

101—102	3	M., W., F., at 10	B. Z. 207	Anderson
		M., W., F., at 4	B. Z. 207	Anderson

HOME ECONOMICS

101—102	5	L., M., W., at 9	H. E. 203	White
		M., W., at 2	H. E. 102	White
		Q., Th., at 10	H. E. 102	White
		F., at 8	H. E. 102	White
		F., at 10	H. E. 321	White
		F., at 1	H. E. 102	White
		Lab., (101-102) M., W., 1 to 3	H. E.	
		(101-102) Tu., Th., 8 to 10		
		{ (101) M., W., 9 to 11; 2nd sem. (102) Tu., F., 10 to 12		
		{ (101) Tu., Th., 1 to 3 2nd sem. (102) M., W., 3 to 5		
104—	3	M., W., F., at 10	H. E. 203	Linder

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
—104	3	M., W., F., at 10	H. E. 203	Linder
		M., W., F., at 2	H. E. 203	
105—106	2 to 5	W., at 10	H. E. 218	Van Meter
		Lab., to be arranged	H. E. 301, 302	
—108	2	Tu., Th., at 9	H. E. 102	Van Meter, Hathaway, Adams
110—	4	Tu., Th., at 8	H. E. 203	Skinner
		Lab., M., W., 1 to 3	H. E. 204	
—110	4	Tu., Th., at 8	H. E. 203	Skinner
		Tu., Th., at 1	H. E. 203	Skinner
		Lab., Tu., F., 10 to 12	H. E. 204	
		M., W., 1 to 3	H. E. 204	
111—112	2	L., M., at 9	H. E. 321	Walker
		M., at 2	H. E. 218, 321	Tucker
		Tu., at 8	H. E. 218	Walker
		Tu., at 2	H. E. 218	Walker
		Th., at 9	H. E. 218, 321	Walker
		Th., at 1	H. E. 218	Walker
		Lab., Tu., 9 to 11	H. E. 215, 216,	
		W., 8 to 10	217	
		W., 1 to 3		
		Th., 2 to 4		
		F., 8 to 10		
		F., 1 to 3		
113—	3	L., Th., at 10	H. E. 203	Hathaway
		Lab., Tu., F., 10 to 12	H. E. 113, 114	
		Tu., Th., 1 to 3		
		M., W., 1 to 3		
—113	3	L., Th., at 11	H. E. 102	Hathaway
		Tu., F., 10 to 12	H. E. 113, 114	
—116	3	Th., at 10	H. E. 203	Hathaway
		M., W., 1 to 3	H. E. 113	
		M., W., 8 to 10	H. E. 113, 114	
118—118	3	Th., at 10; Tu., 10 to 12;	H. E. 218, 211	Tucker
		F., 1 to 3		
		F., at 9; Tu., Th., 3 to 5	H. E. 218	Tucker
119—	3	M., W., at 3; F., 2 to 4	H. E. 218	Walker
—119	3	M., W., at 9; F., 10 to 12	H. E. 218	Walker
		M., W., at 3; F., 2 to 4	H. E. 218	Walker
121—	3	M., at 10	H. E. 218	Linder,
		Lab., Tu., Th., 8 to 10	H. E. 302	Skinner
		M., W., 2 to 4	H. E. 302	
123—124	2	Tu., at 11; Lab., to be arranged	H. E. 203	Adams
125—126	3	To be arranged		White
201—202	2 to 5	To be arranged		White

HORTICULTURE

Course No.	Hours	Time	Room	Instructor
101—	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	
103—104	4	M., W., F., at 8 Lab., W., 2 to 5	H. F. 113	Montgomery
105—106	4	M., W., F., at 9 Lab., M., 1 to 3	H. F. 112	Paddock
107—	3	M., W., F., at 10	H. F. 112	Paddock
109—110	3	Tu., at 11 Lab., to be arranged	H. F. 113	Paddock
—118	4	L., M., W., F., at 10 M., W., F., at 2 Lab., Th., 8 to 10 F., 2 to 4	H. F. 112 H. F. 112	Montgomery
—120	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	
121—122	4	M., Th., F., at 11 Lab., W., 2 to 4	H. F. 113	
131—132	4	M., W., F., at 9 Lab., F., 2 to 5	H. F. 113	Montgomery
133—	3	Tu., at 9; Tu., 1 to 5	H. F. 113	Montgomery
141—142	4	M., W., F., at 8 Th., 1 to 4	H. F.	Hottes
—143	3	Tu., Th., at 8 Lab., Tu., 1 to 3	H. F.	Hottes
—144	3	Tu., Th., at 9; M., 1 to 3	H. F.	Hottes
145—	3	Tu., Th., at 9; F., 1 to 3	H. F.	Hottes
—146	3	M., W., at 10 F., 1 to 3	H. F.	Hottes
147—148	3	To be arranged	H. F.	Hottes
—150	3	F., at 11 Lab., M., Tu., 1 to 4		
151—152	2	Tu., at 10 S., 9 to 12	H. F.	
—154	3	M., W., F., at 10	H. F.	
—156	2	M., W., at 8	H. F. 203	
157—158	3	M., at 11 Tu., Th., 1 to 3	H. F.	
159—160	4	To be arranged	H. F.	
—162	4	Th., at 11 Lab., to be arranged	H. F.	
164—	3	Tu., at 11 M., W., 1 to 4	H. F.	
—165	3	Th., at 10 Lab., to be arranged	H. F.	
—166	3	Tu., at 11; M., W., 1 to 4	H. F.	

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
—168	4	To be arranged	H. F.	
169—170	3	To be arranged	H. F.	
—172	1	To be arranged	H. F.	
180—180	4	L., M., W., F., at 9 Lab., W., 1 to 4	H. F.	Scherer
181—182	3	L., Tu., Th., at 9 Lab., F., 1 to 4	H. F.	Scherer
183—	3	L., Tu., Th., at 10 Lab., M., 1 to 4	H. F.	Scherer
—184	3	L., M., W., F., at 8	H. F.	Scherer
201—202	5 to 10	To be arranged	H. F.	Paddock

For Short Courses Only

51—52	4	M., W., F., at 3 Lab., Tu., 8 to 10	H. F. 113	
53—54	4	M., W., F., at 1 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 F., 8 to 10	H. F. 113	
55—56	4	M., W., F., at 1 Lab., Th., 8 to 10	H. F. 112	Montgomery
57—58	4	M., W., F., at 11 Lab., Th., 1 to 3	H. F.	Paddock
59—	4	M., W., F., at 10 Lab., W., 1 to 3	H. F.	Paddock
—60	4	M., Tu., Th., F., at 9	H. F.	
—62	4	M., W., F., at 9 Lab., Th., 1 to 3	H. F.	Montgomery
—64	4	M., W., F., at 10 Lab., Tu., 1 to 3	H. F.	Montgomery
65—66	4	M., W., F., at 9 Lab., W., 2 to 4	H. F.	Hottes
67—	4	M., W., F., at 10 Lab., Tu., 1 to 3	H. F.	Scherer

JOURNALISM

101—102	3	M., W., at 9 M., W., at 1 Agr. Tu., at 11 Lab., to be arranged	S. 208 S. 208 S. 208	Myers Myers Baker
102—101	3	Tu., Th., at 9	S. 208	Myers

MATHEMATICS

Course No.	Hours	Time	Room	Instructor
107—107	3	M., W., F., at 8	U. 310	Rickard
		M., W., F., at 9	U. 310	Rasor
		M., W., F., at 10	U. 312	Bohannan
		M., W., F., at 1	U. 310	Bareis
		M., W., F., at 2	U. 310	Rasor
		M., W., F., at 3	U. 312	Arnold

METEOROLOGY

—101	2	Tu., Th., at 10	O. 1	Bownocker
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MILITARY SCIENCE AND TACTICS

1—1	1	M., W., Th., F., at 11	Ha.	Converse,
		Tu., W., Th., at 4; Th., at 11		Small
2—2	1	M., W., F., at 11	Ha.	Converse,
		Tu., W., Th., at 4		Small

PHYSICAL EDUCATION

For Men

101—102	1	Tu., Th., at 10		Bird
		M., W., at 10		
		M., F., at 10		
		W., F., at 10		
		Tu., Th., at 11		
		Tu., Th., at 2		
		M., W., at 2		Ohlson
		M., F., at 2		Ohlson
		W., F., at 2		Ohlson
		Tu., Th., at 3		Ohlson
		M., W., at 3		Bird
		M., F., at 3		Bird
		W., F., at 3		Bird
		Tu., Th., at 4		Bird
		M., W., at 4		Ohlson
		M., F., at 4		Ohlson
		W., F., at 4		Ohlson
		(Hours to be arranged for corrective work.)		
107—	2	Tu., Th., at 3	Ath. House	St. John,
				Wilce,
—110	2	M., Th., at 11	Ath. House	Castleman
				Wilce

PHYSICAL EDUCATION—Continued

Course No.	Hours	Time	Room	Instructor
—112	2	Tu., Th., at 4	P. 109	St. John, Wilce, Castleman
—120	2	Tu., F., at 11		Castleman
—122	2	L., M., at 4 Lab., Tu., Th., at 5		Bird
125—	2	Tu., F., at 11		Nichols

For Women

131—132	1	Tu., at 11; 3 hours to be arranged		Breyfogle, Meyer, Hammett
133—134	1	4 hours to be arranged		Meyer, Hammett
135—136	3	Tu., Th., 9 and 3		Meyer, Hammett

PHYSICS

103—104	4	M., W., F., at 8	Ph. 205	Earhart
		M., W., F., at 3	Ph. 205	Earhart
		Lab., W., 9 to 11	Ph.	
		W., 1 to 3		
105—106	4	Tu., Th., at 10	Ph. 301, 205	
		Tu., Th., at 3	Ph. 205	
		Lab., Tu., Th., 8 to 10		
		Tu., Th., 1 to 3		
109—109	3 Agr.	M., W., F., at 8	Ph. 202	Cole
		M., W., F., at 9	Ph. 202	Cole
		M., W., F., at 10	Ph. 202	Cole
		M., W., F., at 1	Ph. 202	Cole
		M., W., F., at 2	Ph. 202	Cole
		M., W., F., at 3	Ph. 202	Cole

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY
AND PHARMACOLOGY

101—102	3	M., W., F., at 8	Bio. 200	
		M., W., F., at 9	Bio. 100	
		M., W., F., at 10	Bio. 200	
		M., W., F., at 1	Bio. 200	
		M., W., F., at 2	Bio. 200	
		M., W., F., at 3	Bio. 200	
—104	3	Tu., Th., 8 to 11	Bio. 208	Bleile
135—136	4	L., Tu., Th., at 9	Bio.	Bleile, Durrant
		Lab., Tu., Th., 1 to 3		

PSYCHOLOGY

Course No.	Hours	Time	Room	Instructor
101—102	3	M., W., F., at 8	U. 400	All Instructors
		M., W., F., at 8	U. 401	
		M., W., F., at 9	U. 401	
		M., W., F., at 9	U. 400	
		M., W., F., at 9	U. 412	
		M., W., F., at 10	U. 400	
		M., W., F., at 10	U. 401	
		M., W., F., at 10	U. 406	
		M., W., F., at 1	U. 400	
		M., W., F., at 1	U. 406	
		M., W., F., at 2	U. 400	
		M., W., F., at 2	U. 401	
		M., W., F., at 3	U. 400	
		M., W., F., at 4	U. 400	
102—101	3	M., W., F., at 3	U. 401	
		M., W., F., at 3	U. 406	

PUBLIC HEALTH AND SANITATION

Science Nursing

—106	2	To be arranged
—110	2	To be arranged
111—	2	To be arranged
113—	2	To be arranged
115—	1	To be arranged
117—	1	To be arranged
119—	10	To be arranged
—122	2	To be arranged
—124	2	To be arranged
125—	1	To be arranged
127—	1	To be arranged
129—	2	To be arranged
131—	2	To be arranged
133—	2	To be arranged
135—	1	To be arranged
137—	1	To be arranged
139—	6	To be arranged

PUBLIC SPEAKING

101—102	2	Tu., Th., at 8	Ph. 304	Ketcham
		Tu., Th., at 8	Li. 307	Eich
		Tu., Th., at 10	Ph. 303	Ketcham
		Tu., Th., at 10	Ph. 304	Eich
		M., W., at 1	Ph. 304	Eich
		Tu., Th., at 1	Ph. 304	Ketcham
		Tu., Th., at 1	Ph. 303	Eich
		Tu., Th., at 2	Ph. 303	Eich
101—	2	M., W., at 3	Ph. 204	Eich

ROMANCE LANGUAGES

French

Course No.	Hours	Time	Room	Instructor
101—102	4	M., Tu., W., Th., at 8	U. 303	All Instruc- tors
		M., Tu., W., Th., at 8	H. F. 203	
		M., Tu., W., Th., at 9	H. F. 203	
		M., Tu., W., Th., at 9	Ph. 302	
		M., Tu., W., Th., at 10	U. 303	
		M., Tu., W., Th., at 10	U. 302	
		M., Tu., W., Th., at 1	U. 303	
		M., Tu., W., Th., at 1	U. 302	
		M., Tu., W., Th., at 2	Br. 200	
		M., Tu., W., Th., at 2	H. F. 203	
		M., Tu., W., Th., at 3	U. 302	
		M., Tu., W., Th., at 3	H. F. 203	
		M., Tu., W., Th., at 4	U. 301	
		M., Tu., W., Th., at 4	U. 303	
—101	4	M., Tu., W., Th., at 3	H. E. 203	
102—103	4	M., Tu., W., Th., at 3	U. 301	All Instruc- tors
103—104	4	M., Tu., W., Th., at 8	U. 302	
		M., Tu., W., Th., at 9	U. 302	
		M., Tu., W., Th., at 10	H. F. 108	
		M., Tu., W., Th., at 1	H. F. 203	
		M., Tu., W., Th., at 2	U. 303	
		M., Tu., W., Th., at 4	U. 302	Chapin
104—	4	M., Tu., W., Th., at 3	H. E. 203	
—106	4	M., Tu., W., Th., at 10	Br. 1	

Spanish

101—102	4	M., Tu., W., Th., at 8	U. 301	All Instruc- tors
		M., Tu., W., Th., at 8	Ph. 303	
		M., Tu., W., Th., at 9	U. 303	
		M., Tu., W., Th., at 9	Ph. 303	
		M., Tu., W., Th., at 10	Ph. 302	
		M., Tu., W., Th., at 10	H. F. 106	
		M., Tu., W., Th., at 1	U. 301	
		M., Tu., W., Th., at 2	U. 301	
		M., Tu., W., Th., at 2	Br. 104	
		M., Tu., W., Th., at 3	U. 303	
		M., Tu., W., Th., at 4	U. 303	
01—	4	M., Tu., W., Th., at 1	Li. 107	Hamilton Chapin Gutierrez
—101	4	M., Tu., W., Th., at 1	Li. 107	
03—104	4	M., Tu., W., Th., at 10	U. 301	
		M., Tu., W., Th., at 4	Ph. 303	

RURAL ECONOMICS

Course No.	Hours	Time	Room	Instructor
101—101	2	Tu., at 10; W., 1 to 4	T. 106	Phillips
		M., at 11; W., 8 to 11	T. 106	
102—	2	Tu., at 11; Th., 8 to 11	T. 124	Falconer
103—	4	M., W., F., at 8	T. 124	Falconer
		M., W., F., at 1	T. 124	Falconer
		Lab., Th., 1 to 5		
		S., 8 to 12		
104—104	3	M., W., F., at 8	T. 106	
		M., W., F., at 1	T. 106	
105—	2	M., W., at 9	T. 124	Falconer
—110	3	M., W., F., at 9	T. 124	Lantis
—111	1	Tu., at 11; Th., 8 to 11		Falconer
113—	3	M., W., F., at 9	T. 106	Erdman
—114	2	To be arranged		Falconer
—116	2	To be arranged		Erdman
—118	2	To be arranged		Lantis
201—202	3 to 10	M., at 4	T. 124	

For Short Courses Only

51—51	4	Tu., Th., at 3	T. 106	Phillips
		Lab., M., Tu., 8 to 10		
		Th., F., 8 to 10		
52—52	4	Tu., Th., at 11	T. 106	
		Lab., to be arranged		
53—	4	To be arranged		
—54	4	To be arranged		

SHOPWORK

101—101	2	Tu., at 8; Tu., 1 to 4	S.	Beem,
		Tu., at 10; F., 1 to 4	S.	Denman,
		Tu., at 1; Tu., 8 to 11	S.	Smith,
		Tu., at 1; F., 8 to 11	S.	Senn
		Tu., at 10; M., 1 to 4	S.	
		Th., at 1; Th., 8 to 11	S.	
		Th., at 3; M., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	
103—103	2	Tu., at 8; Tu., 1 to 4	S.	Foust,
		Tu., at 10; F., 1 to 4	S.	Wright
		Tu., at 10; M., 1 to 4	S.	
		Tu., at 1; Tu., 8 to 11	S.	
		Tu., at 1; F., 8 to 11	S.	
		Tu., at 3; M., 8 to 11	S.	
		Th., at 2; Th., 8 to 11	S.	
		F., at 9; Th., 1 to 4	S.	

SHOPWORK—Continued**For Short Courses Only**

Course No.	Hours	Time	Room	Instructor
51—51	2	M., at 1; W., 8 to 11	S.	
		F., at 11; F., 8 to 11	S.	
		W., at 1; W., 2 to 5	S.	
		M., at 1; M., 2 to 5	S.	
52—52	2	M., at 1; W., 8 to 11	S.	
		F., at 11; F., 8 to 11	S.	
		W., at 1; W., 2 to 5	S.	
		M., at 1; M., 2 to 5	S.	

SURVEY OF AGRICULTURE

1st sem.	1	M., at 4	T. 205	Vivian
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VETERINARY MEDICINE

151—	3	M., W., F., at 8	V. L. 100	
—152	3	To be arranged		

For Short Courses Only

51—52	3	M., Th., F., at 11	V. C.	
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ZOOLOGY AND ENTOMOLOGY**Zoology**

101—102	3	L., M., W., at 8	B. Z. 67	All Instruc-
		M., W., at 9	B. Z. 67	tors
		M., W., at 1	B. Z. 67	
		M., W., at 2	B. Z. 67	
		M., W., at 3	B. Z. 67	
		Lab., M., 1 to 3	B. Z. 65, 69	
		Tu., 8 to 10	B. Z. 65, 69	
		Tu., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10	B. Z. 65, 69	
		Th., 1 to 3	B. Z. 65, 69	
		F., 8 to 10	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	
		Pre-Medics and Dentistry		
		M., W., at 10	B. Z. 67	
		M., 8 to 10	B. Z. 65, 69	
—101	3	Tu., Th., at 3; S., 8 to 10	B. Z. 67, 65	
115—115	3	M., W., F., at 10	B. Z. 211	Barrows
121—122	3	L., Tu., at 1	B. Z. 111	Kostir
		Lab., Tu., 2 to 4; Th., 1 to 3		

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
123—	2	To be arranged	B. Z.	Kostir
—124	2	To be arranged	B. Z.	Osburn, Krecker
129—	2 to 5	M., Th., at 11	B. Z. 67	Barrows
—130	2 to 5	M., Th., at 11	B. Z. 67	Barrows
131—132	3	M., Th., F., at 11	B. Z. 109	Osburn
139—140	2	M., at 10; Tu., 1 to 4	B. Z.	Hine
141—142	3 to 5	To be arranged	B. Z.	
145—	3	To be arranged	B. Z.	Barrows
153—154	2 to 5	Tu., Th., at 9	B. Z. 67	Barrows
157—158	3	M., F., at 10; W., 1 to 4	B. Z. 111	Krecker
159—160	3 to 5	L., Tu., Th., at 8 Lab., to be arranged	B. Z. 209	Krecker
201—202	1	To be arranged	B. Z.	Osburn
223—224	3 to 5	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	
247—248	5	To be arranged	B. Z.	Osburn

Entomology

107—108	3	L., Tu., Th., at 8 Tu., Th., at 1 Lab., W., 8 to 10 W., 1 to 3	B. Z. 100 B. Z. 67 B. Z. 65, 69 B. Z. 65, 69	Metcalf Metcalf Metcalf Metcalf
—112	3	Tu., Th., at 8 Lab., Th., 1 to 4 S., 8 to 11	B. Z. 211 B. Z. B. Z.	Hine
113—114	4	Tu., Th., at 10 Lab., M., W., F., 1 to 4	B. Z. 109 B. Z. 107	Metcalf
137—138	3 to 5	Tu., Th., at 10 Lab., M., W., F., 1 to 4	B. Z. 109	Metcalf
141—142	3 to 5	To be arranged	B. Z.	
147—	2	Tu., Th., at 10	B. Z. 211	Hine
—148	2	Tu., Th., at 9	B. Z. 109	Osburn
149—150	3 to 5	M., F., at 11 Lab., F., 8 to 11	B. Z. 211	Metcalf
151—152	3	Tu., at 11 Lab., Tu., F., 1 to 4	B. Z. 211	Metcalf
155—156	3	M., W., F., at 9	B. Z. 211	Hine
—162	4	To be arranged	B. Z.	
201—202	1	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	

For Short Courses Only

51—52	4	M., W., Th., F., at 2	B. Z. 211	Hine
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The Ohio State University Bulletin is issued at least twenty times during the year; monthly in July, August, September, and June, and bi-weekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XXIII

MARCH, 1919

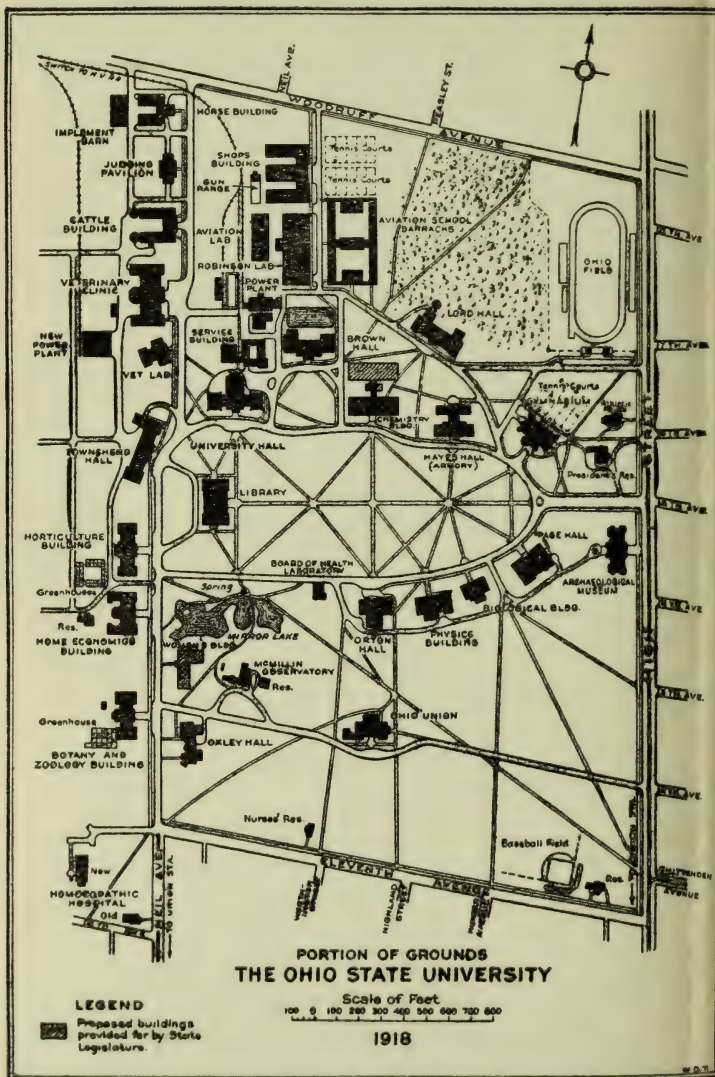
NUMBER 19

COLLEGE OF AGRICULTURE

1919-1920

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

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UNIVERSITY CALENDAR

1919

- Summer Session, Monday, June 23 to Friday, August 15.
Entrance examinations, Tuesday to Saturday, June 24 to 28,
8 A. M.
Entrance examinations, Tuesday to Saturday, September 9 to
13, 8 A. M.
Registration Day—First Semester—Tuesday, September 16.
President's Annual Address, Wednesday, September 17, 11 A. M.
Latest date for registration of candidates for a degree at the
Commencement in June, 1920, October 1.
Registration Day, Short Courses in Agriculture—First Term—
Tuesday, October 14.
Mid-semester reports to the Deans concerning delinquent stu-
dents, Wednesday, November 19.
Thanksgiving recess begins November 26, 1 P. M., and ends
December 2, 8 A. M.
Christmas recess begins Friday, December 19, 6 P. M.

1920

- Christmas recess ends Tuesday, January 6, 8 A. M.
Registration Day, Short Courses in Agriculture—Second Term—
Tuesday, January 6.
Final examinations, Wednesday, January 21 to Thursday, Jan-
uary 29.
Farmers' Week, Monday, January 26 to Friday, January 30.
First semester ends Thursday, January 29, 6 P. M.
Registration Day—Second Semester—Tuesday, February 3.
University Day, Saturday, February 21.
Close of Second Term, Short Courses in Agriculture, Friday,
March 12.
Mid-semester reports to the Deans, Saturday, March 21.
Easter recess, Thursday noon, April 1 to Tuesday, April 6,
8 A. M.
Competitive Drill—Cadet Regiment—Saturday, May 29.
Memorial Day, Sunday, May 30.
Final examinations, Wednesday, June 3 to Thursday, June 10.
Commencement, Tuesday, June 15.
Summer Session, Monday, June 21 to Friday, August 13.
Entrance examinations, Tuesday, June 22 to Saturday, June 26,
8 A. M.

THE FRANKLIN D. CHI.

THE FARMER'S CALENDAR

JANUARY.							FEBRUARY.							MARCH.							APRIL.								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
.....	1	2	3	4	1	1	1	2	3	4	5
5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19	20	
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22	20	21	22	23	24	25	26	27	
26	27	28	29	30	31	23	24	25	26	27	28	23	24	25	26	27	28	29	27	28	29	30
.....	30	31	
MAY.							JUNE.							JULY.							AUGUST.								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
.....	1	2	3	4	5	6	7	
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9		
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16		
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23		
25	26	27	28	29	30	31	29	30	.....	.....	.....	.....	.....	27	28	29	30	31	.....	.....	24	25	26	27	28	29	30
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	.....	.....	.....	.....	.....	.....
SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
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7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8	7	8	9	10	11	12	13		
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15	14	15	16	17	18	19	20		
21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22	21	22	23	24	25	26	27		
28	29	30	.....	.....	.....	.....	26	27	28	29	30	31	.....	23	24	25	26	27	28	29	28	29	30	31	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

THE FRANKLIN CO. CHICAGO

THE FRANKLIN CO. CHI.

JANUARY.							FEBRUARY.							MARCH.							APRIL.							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
....	....	....	....	1	2	3	1	2	3	4	5	6	7	....	1	2	3	4	5	6	....	....	....	....	1	2	3
4	5	6	7	8	9	10	8	9	10	11	12	13	14	7	8	9	10	11	12	13	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	15	16	17	18	19	20	21	14	15	16	17	18	19	20	11	12	13	14	15	16	17	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	21	22	23	24	25	26	27	18	19	20	21	22	23	24	
25	26	27	28	29	30	31	29	....	....	....	....	....	....	28	29	30	31	....	....	....	25	26	27	28	29	30	....
....	
MAY.							JUNE.							JULY.							AUGUST.							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
....	....	....	....	....	....	1	....	....	1	2	3	4	5	....	....	....	....	1	2	3	1	2	3	4	5	6	7
2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	
9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	
16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	
23	24	25	26	27	28	29	27	28	29	30	....	....	....	25	26	27	28	29	30	31	29	30	31	....	....	....	....
30	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.							
S	M	T	W	T	F	S	3	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
....	1	2	3	4	1	1	2	3	4	5	6	1	2	3	4
5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	
12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	
19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	
26	27	28	29	30	24	25	26	27	28	29	30	28	29	30	26	27	28	29	30	31	
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Office:	201 Home Economics Building—99367
Residence:	1463 Neil Ave.—16522

COLLEGE OF AGRICULTURE

Dean.....	ALFRED VIVIAN
Office:	100 Townshend Hall—99328
Residence:	375 W. Eighth Ave.—16605
Secretary.....	TRUE G. WATSON
Office:	100 Townshend Hall—99328; Campus 431—N. 2206
Residence:	29 W. Frambes Ave.—N. 7841

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises eleven colleges and a graduate school, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Education
College of Agriculture	College of Engineering
College of Arts, Philosophy and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1919-1920.

(NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.)

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this college consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses

are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

ANIMAL HUSBANDRY SCHOOL. Soil Fertility, Farm Crops, and Animal Husbandry.

DAIRY SCHOOL. Soil Fertility, Farm Crops, and Dairying.

HORTICULTURAL SCHOOL. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

HOMEMAKERS' COURSE. Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information concerning the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus, Ohio.

SCIENCE NURSING

The Science Nursing Curriculum offers preparation for women as supervising nurses, hospital superintendents, social service nurses, industrial nurses, and hospital dietitians. It enables the student to accomplish in five calendar years what would ordinarily require seven academic years.

The Science Nursing Curriculum is offered by the Ohio State University in cooperation with the Protestant Hospital Training

School for Nurses. The work in this Curriculum parallels closely the first three years of the Curriculum in Home Economics and the Three-Year Curriculum in Nursing of the Protestant Hospital Training School for Nurses.

The proposed Curriculum meets the requirements of the National League for Nursing Education, the American Nurses Association, the National Organization for Public Health Nursing, and the legal requirements of the state of Ohio. The graduates of this course will be eligible for admission to the State examination for the registration of nurses.

Upon the satisfactory completion of the work prescribed in the Ohio State University and the Protestant Hospital Training School for Nurses the student will be recommended for the degree of Bachelor of Science and a Diploma in Nursing.

GENERAL INFORMATION

RESERVE OFFICERS' TRAINING CORPS

Under the Defense Act of June 3rd, 1916, there was established at the Ohio State University a Reserve Officers' Training Corps to which all students are eligible who have completed the requirements in Military Drill for the first and second years. Students entering the Reserve Officers' Training Corps are required to complete a practical and theoretical course in Military Science extending through the Junior and Senior years of residence. When this requirement is completed the President of the United States will grant them a commission as Second Lieutenant in the Officers' Reserve Corps when recommended by the Commandant of Cadets and the President of the University.

During this two years of required work the United States will furnish to the student one complete uniform each year and one ration which is commuted at 30 cents per day during the fiscal year.

WOMEN STUDENTS

As far as possible women students should make arrangements for room and board before coming to Columbus. While

the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed four dollars a week. Prospective women students should address Mrs. George L. Converse, Acting Dean of Women, Ohio State University, Columbus, Ohio.

FEEES

All fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until the incidental and laboratory fees are paid.

Incidental Fee. The fee for all students is fifteen dollars a semester.

The fee for the short courses is ten dollars a term.

Former students, who have not paid this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit of five dollars for each course requiring such supplies is made at the Bursar's office before the work is begun. In Chemistry and Bacteriology, the deposit is ten dollars; in Botany and Zoology, the fee is two dollars. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at first cost to the University, and charged against the deposits. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

Cadet Uniform. The uniform with which the members of the regiment are required to provide themselves costs (without

overcoat) about twelve dollars. It is quiet in pattern and may be worn in place of civilian dress.

New students are advised against buying second-hand uniforms unless they have been previously inspected and approved by the Commandant. Inspection has shown in many cases that second-hand uniforms were unfit to wear and certainly not worth the price asked for them. All such uniforms are subject to rejection by the Commandant.

Students should not arrange for uniforms until so directed by the military authorities.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid to the Bursar of the University before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms, accommodating two students, can be rented at one dollar to one dollar and a half per week for each student. Board at the restaurants and boarding clubs near the University costs from four dollars to four dollars and fifty cents per week. Board, with furnished rooms, can be obtained in private families at rates varying from five and a half to six dollars per week.

Board can be secured at the Ohio Union Commons at reasonable rates.

Text-books. Students should not purchase text-books until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University

for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Incidental fee.....	\$30 00
Ohio Union.....	2 00
Gymnasium locker.....	4 00
Deposits to cover laboratory materials and breakage	20 00
Uniform, shirt and gloves.....	15 00
Books	15 00
Board—36 weeks at \$4.50 per week.....	162 00
Room rent, at \$1.00 per month.....	90 00
General expenses.....	100 00
	<hr/>
	\$438 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books, uniform and other expenditures incident to securing a room and board, a student should come prepared to expend from \$65.00 to \$75.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

SCHOLARSHIPS

FREE SCHOLARSHIPS

Two types of free scholarships are offered in the College of Agriculture:

(1) Scholarships good for four-year courses in the College of Agriculture.

(2) Scholarships good for the three-year courses in Agriculture and Horticulture.

FOUR-YEAR SCHOLARSHIPS

Twenty of these scholarships are assigned to each of the four districts into which the State is divided by the State Superintendent of Public Instruction for the purpose of supervising agricultural instruction given in public schools.

Each scholarship is good for four years, and five of them become available in each district each year.

These scholarships are awarded to graduates of first and second grade high schools, through a competitive examination in high school agriculture that is held under the supervision of the State Supervisors of Agricultural Education.

SHORT COURSE SCHOLARSHIPS

Three of these scholarships are assigned to each county in the State. Each scholarship is good for three years, and one becomes available each year.

These scholarships are awarded under rules and regulations of the State Agriculture Commission, as prizes in the Junior Contest work conducted by the Commission.

VALUE OF SCHOLARSHIPS

The scholarships cover the University fixed fee. In the short courses a student saves \$20 per year, and in the four-year courses, \$30 per year.

For further information concerning these scholarships address the Dean of the College of Agriculture, The Ohio State University, Columbus, Ohio.

SHEPHERD'S SCHOLARSHIP

The Philadelphia Wool and Textile Association offers a scholarship of one hundred and fifty dollars to a disabled soldier appointed by the Faculty of the Department of Animal Husbandry, who wishes to specialize in sheep husbandry work. This scholarship requires that the applicant be a college graduate, and provides for him to receive special work in sheep husbandry subjects during the entire year as his major line of work.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS FOR AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

An applicant for admission who does not present the recommended units in foreign language will be required to elect foreign language in his freshman year.

No applicant under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant

must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

REQUIREMENTS FOR HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large.

An applicant for admission who does not present these units will be required to carry courses in the University to make up the deficiency and this may delay her graduation.

REQUIREMENTS FOR SCIENCE NURSING

An applicant for admission to this course must be a graduate of a high school of the first grade or receive credit by examination for fifteen units.

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large. An applicant for admission who does not present these units will be required to carry courses in the University to make up the deficiency and this may delay her graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

ADMISSION TO SHORT COURSES

No examinations will be required for the three-year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age and, unless over twenty-one years of age, must satisfy the Entrance Board that he has had practical experience in agriculture or horticulture. This practical experience is interpreted as meaning one year of actual farm life, twelve consecutive months.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College except the curriculum in Home Economics, is made uniform.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
English	(101)	2	English	(104)	2
*Mathematics	(107)	3	*Physics	(109)	3
*Drawing	(125)	2	*Geology	(151)	3
*Shopwork	(101)	2	*Shopwork	(103)	2
Survey of Agriculture		1	Military Drill		1
Military Drill		1	Physical Education		1
Physical Education		1			

Students may substitute 4 hours of German, French or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students planning to specialize in Farm Crops should schedule Botany 101-102 the first year and Zoology 101-102 the second year.

Students expecting to major in Landscape Architecture should consult the outlined curriculum. (See page 17.)

*These courses may be taken in either semester.

SECOND YEAR

First Semester

Second Semester

Agricultural Chemistry	(103)	5	Soils	(152)	5
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(101)	3
Military Drill		1	Military Drill		1

And at least 7 hours from the following:

Physiology	(101)	3	Physiology	(102)	3
Psychology	(101)	3	Psychology	(102)	3
Economics	(101)	3	Economics	(102)	3
Entomology	(107)	3	Entomology	(108)	3
Foreign Language		4	Foreign Language		4
*Animal Husbandry	(135)	4	Animal Husbandry	(137)	3
Horticulture	(101)	4	Horticulture	(*118 or 120)	4
*Farm Crops	(101)	4	*Agricultural Engineering	(101)	4
*Dairying	(101)	4	Dairying	(102)	4
Geology	(105)	3	Geology	(106)	3
English (105, 121, 141			English (106, 122, or 133)	2 or 3	
or 145)	2 or 3		Meteorology	(101)	2
Anatomy	(101)	3	Anatomy	(102)	3

*These courses may be taken in either semester.

THIRD YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

FOURTH YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 101-102, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural and forestry subjects must take Economics 101-102, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on page 17.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum outlined on page 19.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine and Dentistry.

FARM EXPERIENCE

As a prerequisite for graduation in all the courses in the College of Agriculture, excepting Home Economics, students graduating in June, 1920, must have had two summers of farm experience; in 1921, three summers of farm experience; and 1923, one full year of farm experience. This requirement shall

be interpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his junior year.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and thirty-six semester hours, exclusive of military drill and physical education, the student will be recommended for the degree, Bachelor of Science.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103.

SECOND YEAR

First Semester		Second Semester	
Architecture	(131) 2	Art	(141) 2
Civil Engineering	(131) 5	Horticulture	(154) 3
Engineering Drawing	(108) 3	Modern Language	4
Horticulture	(151) 2	Horticulture	(152) 2
Modern Language	4	Horticulture	(150) 3
Military Drill	1	Elementary Landscape Design	
		Architecture	(132) 2
		Military Drill	1

THIRD YEAR

Architecture	(133) 3	Architecture	(136) 3
History		History	
Art	(133) 2	Art	(136) 2
Economics	(101) 3	Economics	(102) 3
Civil Engineering	(133) 1	Horticulture	(162) 4
Horticulture	(157) 3	Horticulture	(158) 3
Landscape Design		Landscape Design	
Entomology	(155) 3	Elective	2 or 3
Elective	2 or 3		

FOURTH YEAR

Architecture	(113) 2	Botany	(116) 3
Art	(142) 3	Plant Pathology	
Horticulture	(159) 4	Horticulture	(172) 1
Horticulture	(164) 3	Proseminary in Landscape	
Civic Design		Horticulture	(160) 4
Horticulture	(169) 3	Advanced Design	
Psychology	(101) 3	Horticulture	(170) 3
		Horticulture	(166) 3
		Horticulture	(165) 3

HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Art	(119)	1	English	(104)	2
English	(101)	2	Zoology	(102)	3
Zoology	(101)	3	or		
or			Botany	(102)	3
Botany	(101)	3	Modern Language	(102, 104 or	
Modern Language	(101 or 103)	4	French or German	106)	4
French or German			Home Economics	(112)	2
Home Economics	(111)	2	Physical Education		1
Physical Education		1			

SECOND YEAR

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic			Home Economics	(102)	5
Home Economics	(101)	5	Physiology	(102)	3
Physiology	(101)	3	Modern Language	(104 or 106)	4
Modern Language	(103)	4	French or German		
French or German			Art	(141)	2
Art	(131)	2	Physical Education		1
Physical Education		1			

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Bacteriology	(107)	4	Home Economics	(104)	3
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Bibliography	(103)	½	Home Economics	(118)	3
Engineering Drawing	(127)	1½	Engineering Drawing	(128)	1½

Electives to make at least 15 hours throughout the year.

FOURTH YEAR

Sociology	(101)	3	Sociology	(102)	3
Home Economics	(105)	2 to 5			
Home Economics	(119)	3			

Electives to make at least 15 hours throughout the year.

Electives for the third and fourth years must include not less than six hours of English, and for students not offering entrance credit in American history, six hours of American history.

Requirements for a Degree

Upon the satisfactory completion of the course as outlined, under the restrictions and requirements prescribed above, the student will be recommended for the degree, Bachelor of Science.

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester		Second Semester	
Entomology	(107) 3	Entomology	(108) 3
Botany	(101) 3	Botany	(102) 3
Modern Language	4	Modern Language	4
French, Spanish or German		French, Spanish or German	
Farm Crops	(101) 4	Military Drill	1
Art	(131) 2	Elective	6
or			
Public Speaking	(101) 2		
Military Drill	1		

THIRD YEAR

Entomology	(113) 4	Entomology	(114) 4
Entomology	(153) 2	Botany	(116) 3
Bacteriology	(107) 4	Bacteriology	(108) 4
Physiology	(101) 3	Physiology	(102) 3
or		or	
Anatomy	(101) 3	Anatomy	(102) 3
Architecture	(111) 2	Elective	3
Elective	2 or 3		

NOTE—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(149) 3	Entomology	(112) 3
Entomology	(147) 2	or	
Entomology	(151) 3	Entomology	(150) 3
Elective	9 or 10	Entomology	(148) 2
		Entomology	(152) 3
		Elective	9 or 10

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline of the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 14-17.

AGRICULTURAL CHEMISTRY AND SOILS

Students who take the major subject in Agricultural Chemistry and Soils may specialize in any of the following phases of the subject:

1. Chemistry of Animal Nutrition.
2. Chemistry of Dairy Products.
3. Chemistry of Fertilizers.
4. Chemistry of Plant Life.
5. Chemistry of Soils.
6. Food Inspection and Analysis.

All students intending to major in this department should consult Mr. Lyman or Mr. Bear for advice in outlining a curriculum. It is desirable that this consultation be held soon after admission to the College in order that the student may take best advantage of optional and elective privileges.

Students majoring in dairying, animal husbandry, crops, horticulture, botany and zoology can elect minors in the department of Agricultural Chemistry and Soils to advantage.

ANIMAL HUSBANDRY

First Year: Uniform first year

Second Year: Animal Husbandry (135) 4 hours
Elementary Live Stock Judging
Animal Husbandry (137) 3 hours
Principles of Feeding

Third Year: Animal Husbandry (139) 3 hours
Horse Production and Management
Animal Husbandry (141) 3 hours
Beef Cattle Production and Management

- Animal Husbandry (143) 3 hours
 - Swine Production and Management
- Animal Husbandry (145) 3 hours
 - Dairy Cattle Production and Management
- Animal Husbandry (147) 3 hours
 - Sheep Production and Management

- Fourth Year:**
- Animal Husbandry (149) 4 hours
 - Advanced Breed Study
 - Animal Husbandry (151) 3 hours
 - Advanced Live Stock Judging
 - Animal Husbandry (153) 4 hours
 - Meats and Meat Products
 - Agricultural Chemistry (111-112) 2 or 4—2 or 4 hours
 - Animal Nutrition
 - Animal Husbandry (155) 3 hours
 - Live Stock Markets and Marketing
 - Animal Husbandry (157) 4 hours
 - Animal Genetics
 - Animal Husbandry (159) 3 hours
 - Wools and Other Animal Fibers
 - Animal Husbandry (161) 2 hours
 - Herd Book and Pedigree Study
 - Animal Husbandry (163-164) 2 to 5—2 to 5 hours
 - Research and Thesis

POULTRY HUSBANDRY

- Third Year:**
- Animal Husbandry (117-118) 3—3 hours
 - Poultry Husbandry
 - Animal Husbandry (120) 1 hour
 - Poultry Feeding
 - Animal Husbandry (122) 1 hour
 - Incubator Practice
- Fourth Year:**
- Animal Husbandry (119) 2 hours
 - Poultry Management
 - Animal Husbandry (124) 2 hours
 - Poultry Judging

DAIRYING

- First Year:** Uniform first year
- Second Year:** Dairying (101) 4 hours
Principles of Dairying
Dairying (102) 4 hours
Farm Dairying
- Third Year:** Dairying (115) 2 hours
Dairy Buildings
Dairying (105) 4 hours
Buttermaking
Dairying (111) 2 hours
Dairy Mechanics
Dairying (107) 3 hours
Cheesemaking
Bacteriology (107) 4 hours
General Bacteriology
Bacteriology (110) 4 hours
Dairy Bacteriology
- Fourth Year:** Dairying (113-114) 2—2 hours
Advanced Dairying
Dairying (103) 4 hours
City Milk Supply
Dairying (110) 2 hours
Ice-Cream Making
Dairying (119-120) 1—1 hour
Proseminary
Dairying (116) 2 hours
Milk Condensing

FARM CROPS

- First Year:** Botany 101-102 instead of Zoology 101-102
Otherwise, uniform first year
- Second Year:** Farm Crops (101) 3 hours
Field Crop Production
Zoology (115) 3 hours
General Principles of Heredity

Third Year: Farm Crops (109) 3 hours
Cereal Crops
Farm Crops (111) 3 hours
Forage Crops
Farm Crops (113) 3 hours
Plant Breeding
Botany (125-126) 4—4 hours
Plant Physiology

Fourth Year: Farm Crops (123) 2 hours
Crop Ecology
Farm Crops (112) 2 hours
Special Crops
Botany (116) 3 hours
Plant Pathology

FLORICULTURE

First Year: Uniform first year

Second Year: Horticulture (101) 4 hours
Principles of Horticulture
Horticulture (132) 4 hours
Greenhouse Construction and Management

Third Year: Horticulture (141-143) 4—4 hours
Commercial Floriculture
Horticulture (145) 3 hours
Garden Flowers
Horticulture (156) 2 hours
Landscape Architecture

Fourth Year: Horticulture (143) 3 hours
The Flower Shop
Horticulture (146) 3 hours
School Gardens
Horticulture (147-148) 3—3 hours
Systematic Floriculture
Horticulture (144) 3 hours
Conservatory and Bedding Plants

POMOLOGY AND VEGETABLE GARDENING

- First Year:** Uniform first year
- Second Year:** Horticulture (101) 4 hours
Principles of Horticulture
Horticulture (120) 4 hours
Small Fruits and Grapes
- Third Year:** Horticulture (103-104) 4—4 hours
Commercial Vegetable Gardening
Horticulture (105-106) 4—4 hours
Pomology
- Fourth Year:** Horticulture (109-110) 3—3 hours
Experimental Horticulture
Horticulture (133) 3 hours
By-Products
Horticulture (132) 4 hours
Greenhouse Construction and Management
Horticulture (121-122) 4—4 hours
Systematic Pomology
Horticulture (131) 4 hours
Systematic Vegetable Gardening
Horticulture (146) 3 hours
School Gardens

PLANT PATHOLOGY

- First Year:** Uniform first year
- Second Year:** Botany (120) 3 hours
Field Botany
- Third Year:** Botany (127-128) 4—4 hours
Plant Pathology
Botany (139-140) 3—3 hours
Advanced Plant Pathology
- Fourth Year:** Botany (125-126) 4—4 hours
Plant Physiology
Botany (133-134) 3 to 5—3 to 5 hours
Minor Investigations

RURAL ECONOMICS

- First Year:** Uniform first year
- Second Year:** Economics (101-102) 3—3 hours
Principles of Economics
Rural Economics (101) 2 hours
Farm Accounting
- Third Year:** Rural Economics (104) 3 hours
Agricultural Economics
Rural Economics (110) 3 hours
Rural Community Life
Rural Economics (113) 3 hours
The Distribution of Farm Products
- Fourth Year:** Rural Economics (103) 4 hours
Farm Management
Rural Economics (116) 2 hours
Cooperation in Agriculture
Rural Economics (102) 2 hours
Advanced Farm Accounting
Rural Economics (118) 2 hours
Rural Community Development
Rural Economics (105) 2 hours
Historical and Comparative Agriculture
Rural Economics (111) 1 hour
Advanced Farm Management

CURRICULUM IN SCIENCE NURSING

FIRST YEAR

(At the University)

First Semester				Second Semester			
Chemistry	(105) or	(109)	4	Chemistry	(106) or	(110)	4
English		(101)	2	English		(104)	2
Paragraph Writing				Paragraph Writing			
Anatomy		(101)	3	Anatomy		(116)	3
Elementary				Digestive System			
Psychology		(101)	3	Psychology		(102)	3
Elementary				Elementary			
English		(133)	3	English		(146)	3
Engineering Drawing		(127)	1½	Engineering Drawing		(128)	1½
Mechanical Drawing				House Planning			
Physical Education		(131)	1	Physical Education		(132)	1

SECOND YEAR

(At the University)

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic Chemistry			Household Chemistry		
Physiology	(101)	3	Physiology	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	4	Bacteriology	(108)	4
Physical Education	(133)	1	Physical Education	(134)	1

At the close of the second semester of the second year, the student will report immediately to the Protestant Hospital Training School for Nurses for the preliminary nursing period of twelve weeks.

SUMMER TERM

PRELIMINARY NURSING PERIOD

(At Protestant Hospital)

Science Nursing	(101)	3
Elementary Nursing		
Science Nursing	(102)	1
History and Ethics of Nursing		
Science Nursing	(103)	1
Drugs and Solutions		
Science Nursing	(104)	7
Hospital Ward Duty		

The preliminary nursing period requires twelve weeks of eight hours per day with approximately one lecture and seven hours of ward duty each day.

THIRD YEAR

First Semester (At the Protestant Hospital)		Second Semester (At the University)	
Science Nursing	(111) 2	Agricultural Chemistry	(124) 4
Elements of Pathology		Household Chemistry	
Science Nursing	(113) 2	Sociology	(101) 3
Medical Nursing		Economics	(120) 3
Science Nursing	(115) 1	Public Health	(124) 2
Surgical Nursing		Public Health Problems	
Science Nursing	(117) 1	Public Speaking	(102) 2
Materia Medica		Debating	
Science Nursing	(119) 10	Science Nursing	(122) 2
Hospital Ward Duty		Proseminary in Case Studies	

At the close of the second semester of the third year, the student will report immediately to the Protestant Hospital Training School for Nurses for the second nursing period of eight weeks. A month's vacation will be arranged.

SUMMER TERM

SECOND NURSING PERIOD

(At Protestant Hospital)

Science Nursing.....	(123) 8
(Hospital Ward Duty)	

FOURTH YEAR

First Semester (At the Protestant Hospital)		Second Semester (At the University)	
Science Nursing	(125) 1	Home Economics	(110) 4
Gynecological Nursing		Dietetics	
Science Nursing	(127) 1	Home Economics	(119) 3
Orthopedic Nursing		The House	
Science Nursing	(129) 2	Public Health	(106) 2
Obstetrical Nursing		Public Health Nursing	
Science Nursing	(131) 2	Public Health	(110) 2
Nursing in Diseases of Infants and Children		Preventive Medicine	
Science Nursing	(133) 2	Sociology	(112) 4
Nursing in Communicable Diseases		Preventive Philanthropy	
Science Nursing	(135) 1		
Nursing in Diseases of the Eye, Ear, Nose and Throat			
Science Nursing	(137) 1		
Operating Room Technic			
Science Nursing	(139) 6		
Hospital Ward Duty			

At the close of the second semester of the fourth year the student will report immediately to the Protestant Hospital

Training School for Nurses for the third nursing period of eight weeks. A vacation will be arranged.

SUMMER TERM

THIRD NURSING PERIOD

(At Protestant Hospital)

Science Nursing..... (141) 8
(Hospital Ward Duty)

FIFTH YEAR

First Semester

Second Semester

The work of these two semesters will be arranged between the Protestant Hospital Training School for Nurses and the University. The student will be permitted to make a selection of the field of nursing in which she wishes to specialize. The courses selected must aggregate not less than sixteen credit hours for each semester. Elective courses, divided into field and class-room work, will be arranged covering institutional nursing, private duty nursing and public health nursing. These courses will include hospital administration; hospital social service; nursing in mental and nervous diseases; nursing in skin, occupational and venereal diseases; nursing in diseases of infants and children; district nursing, school nursing, tuberculosis nursing and industrial nursing.

Degree.—Upon the satisfactory completion of the work prescribed above the student will be granted the degree of Bachelor of Science and a Diploma in Nursing.

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are cooperative between the University and other colleges of the State, and be-

some effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the cooperating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capital University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science at the end of five years.

FIRST YEAR

First Semester		Second Semester	
English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Zoology	(101) 3	Zoology	(102) 3
or		or	
Botany	(101) 3	Botany	(102) 3
American, European or		American, European or	
Industrial History	3	Industrial History	3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

English	(141 or 145) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Engineering Drawing	(125) 2	Art	2
Modern Language	4	Modern Language	4
Military Drill	1	Military Drill	1

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Physics	(103)	4	Physics	(104)	4
Geology		3	Geology		3

Elective 6 or 7 hours the year on approval of adviser.

FOURTH YEAR

Animal Husbandry	4		
Agricultural Chemistry	4	Choice of any two of these the fourth	
Rural Economics	4	year. Remaining two the fifth year.	
Farm Crops or Soils	4		

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

First Semester			Second Semester		
English	(101)	2	English	(104)	2
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Modern Language		4	Modern Language		4
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
American, European or			American, European or		
Industrial History		3	Industrial History		3
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

English	(141 or 145)	3	English	(133)	3
Mathematics		3	Mathematics		3
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
Engineering Drawing	(125)	2	Art	(131)	2
Modern Language		4	Modern Language		4
Military Drill		1	Military Drill		1

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Physics	(103 or 105)	4	Physics	(104 or 106)	4
Geology	(103)	3	Geology	(104)	3
Zoology	(107)	3	Zoology	(108)	3
or			or		
Botany	(125)	4	Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year).

Agricultural Chemistry (4 hours throughout the year).

In addition to these six hours elective throughout the year, with the approval of the department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Entomology	(107 and 108)	3
Rural Economics	(103 and 104)	4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the Junior year a choice of either Entomology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	3	Botany	(102)	3
Physical Education		1	Physical Education		1

SECOND YEAR

First Semester		Second Semester	
Chemistry	(127) 4	Agricultural Chemistry	(123) 5
Physiology	(101) 3	Physiology	(102) 3
French or German	4	French or German	4
Art	(119) 1	Home Economics	(112) 2
Home Economics	(111) 2	Textiles	
Textiles		Engineering Drawing	(128) 1½
Engineering Drawing	(127) 1½	Physical Education	1
Physical Education	1		

THIRD YEAR

Economics	(101) 3	Economics	(102) 3
Home Economics	(101) 5	Home Economics	(102) 5
Foods		Foods	
Bacteriology	(107) 3	Home Economics	(104) 3
English	(141 or 145) 3	Sanitation	
Art	(131) 2	English	(133) 3
		Art	(141) 2

FOURTH YEAR

Agricultural Chemistry	(124) 4	Home Economics	(110) 4
Psychology	(101) 3	Dietetics	
Sociology	(101) 3	Psychology	(102) 3
Home Economics	(118) 3	Sociology	(102) 3
House Decoration		Home Economics	(119) 3
Elective	3	House Decoration	
		Elective	3

FIFTH YEAR

Home Economics	(105) 3	Home Economics	(106) 3
Proseminary		Proseminary	
History of Education	(101) 3	History of Education	(102) 3
Elective	9	Elective	9

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3), 108 (2), 109 (2).
 Sociology 107 (3), 120 (3).
 Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).
 Chemistry 151-152 (2-2), 153-154 (2 or 3—2 or 3).
 Philosophy 115 (2)—116 (2).
 Greek 115 (2)—116 (2).
 Physiology 104 (3).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements of the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

First Term			Second Term		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Agricultural Engineering	(51)	4	Dairying	(52)	3
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

Horticulture	(53)	4	Horticulture	(54)	4
Soils	(53)	3	Soils	(54)	3
Dairying	(53)	3	Agricultural Engineering	(52)	4
Rural Economics	(51)	4	Animal Husbandry	(54)	4
Farm Crops	(51)	4	Farm Crops	(52)	4
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

First Term		Second Term	
Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Drill	1	Military Drill	1
Choice of at least 7 hours from each group below:			
Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

Agricultural Chemistry	(51) 4	Agricultural Chemistry	(52) 4
Horticulture	(51) 4	Horticulture	(53) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

Soils	(53) 3	Soils	(54) 3
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57) 4	Horticulture	(58) 4
Horticulture	(67) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

First Term			Second Term	
Animal Husbandry	(59)	3	Animal Husbandry	(60) 3
Bacteriology	(51)	4	Dairying	(56) 3
Dairying	(57)	3	Dairying	(58) 3
Animal Husbandry	(51)	4	Animal Husbandry	(52) 4
Horticulture	(59)	4	Horticulture	(66) 4
Horticulture	(65)	4	Horticulture	(64) 4
Dairying	(55)	3	Horticulture	(62) 4

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State, who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year but yet desire some training in the principles of agriculture. On other farms are found mature men, who are past the usual school age but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigations in research and their practical application to work on the farm.

DAIRYING

The work in Dairying is divided into two courses of four weeks each. The first course, "Farm Dairying and Advanced Registry," beginning January 5th, 1920, and ending January 30th, 1920, will be given to meet the demand of those who wish to receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, and the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufacturers," begins February 2nd, 1920, and ends February 27th, 1920. This course has

been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter, cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this department and is given at a time of the year when the butter-makers, cheese-makers, ice cream-makers and milkmen can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN, LYMAN, BEAR, AND ALLEN (Non-Resident),
ASSISTANT PROFESSOR T. G. PHILLIPS, MR. McCLURE,
MR. CONREY, MR. WORKMAN, MR. FRONING,
MR. HALEY, MR. WATSON

AGRICULTURAL CHEMISTRY

Students expecting to major in Agricultural Chemistry and Soils are requested to interview Professors Lyman and Bear concerning election of courses in this and related departments.

103. General Agricultural Chemistry. Five credit hours. First semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

An introductory course on the chemistry of plants and animals.

115. General Agricultural Chemistry. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, a satisfactory course in organic chemistry. Mr. Phillips.

Lectures on the application of chemistry to plant and animal life. This course is intended for students who have had satisfactory preparation in organic chemistry, and for such students it takes the place of course 103 as a requirement. Students who have had work in quantitative analysis should consult with the department before registering for either of these courses.

123-124. Household Chemistry. Four credit hours. The year. (123) Home Economics, second year, second semester; (124) third year, first semester. Prerequisite, Chemistry 106 or 110 and 127. Mr. Lyman, Mr. Froning.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, two years of Chemistry including Agricultural Chemistry 103. Mr. Lyman.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

111-112. Animal Nutrition. Two to four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisites, Agricultural Chemistry 103 or equivalent, and Animal Husbandry 137. Mr. Lyman.

A chemical study of food constituents, their digestion and effect on the body. A discussion of problems in growth, maintenance and fattening of animals. The study of complex feeds, such as are used on the farm, from the standpoint of the more recent conceptions of animal nutrition. Laboratory work includes the separation and study of food nutrients, the determination of coefficients of digestibility, and the effect of selected rations on animals. The lectures may be taken alone for two credit hours.

113. Chemistry of Insecticides and Fungicides. Two credit hours. Second semester. One lecture and one laboratory period each week. Prerequisite, two years of chemistry including Agricultural Chemistry 103. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

114. Plant Chemistry. Two credit hours. Second semester. Two lectures each week. Prerequisite, two years of Chemistry including Agricultural Chemistry 103 or its equivalent in organic chemistry and quantitative analysis. Mr. Phillips.

Lectures will be given on the chemistry of plant constituents, plant metabolism and a few selected plant products.

116. Plant Chemistry. Two credit hours. Second semester. Six hours laboratory work each week. To be preceded or accompanied by Agricultural Chemistry 114. Mr. Phillips.

Work will be done along the lines of detection, determination and separation of plant constituents.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103 or equivalent. Mr. Lyman.

Lectures on the composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Five credit hours. Second semester. Two lectures, one quiz and six laboratory hours each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Vivian, Mr. Bear.

An introductory course on the origin and the chemical and physical properties of soils, their management and fertilization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

153-154. Soil Fertility. Two credit hours. The year. Prerequisite, Soils 152. Mr. Bear.

Lectures and references reviewing the investigational work which has been and is now being conducted on some of the more important soil problems.

155-156. Chemical Analysis of Soils. Three credit hours. The year. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. McClure.

A study of the methods in the quantitative chemical analysis of soils.

157. Origin and Classification of Soils. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Soils 152. Mr. Bear, Mr. Conrey.

A study of the soils of Ohio. Laboratory work will include practice in soil surveying. Field trips will be made, including a trip to the experimental farms at Wooster, and to several sub-station farms.

158. Soil Physics. Three credit hours. Second semester. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. Conrey.

The application of the principles of physical chemistry to the study of soil problems.

159-160. Soil Literature. One credit hour. The year. Prerequisite, Soils 152. Mr. Bear.

Library work in reviewing all the important investigational work which has been done on some soil problem in which the

student may be interested. Designed to familiarize the student with sources of information and current soil literature.

161-162. Chemistry of Fertilizers. One or four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. McClure.

One lecture a week on the processes of fertilizer manufacture and one on the methods of fertilizer control. The laboratory work will include an examination of the various fertilizing materials and practice in routine fertilizer analyses. One lecture a week on the processes of fertilizer manufacture can be elected for one credit hour.

FOR GRADUATES

201-202. Research Work in Soils.

203-204. Soil Seminary.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL EDUCATION

Office, 103 Townshend Hall

PROFESSOR STEWART, ASSISTANT PROFESSOR JOHNSON

101. Teaching of Vocational Agriculture in Secondary Schools. Three credit hours. Either semester. Three lectures each week. Open to juniors and seniors who have obtained the consent of the department. Mr. Stewart.

The course of study, its essentials and its provisions for adaptation to local conditions; laboratory work, home projects, and

illustrated material in their relation to class-room instruction; textbooks and library reference books in agriculture that meet the needs of secondary schools; the teacher of agriculture as a factor in community life.

103-104. Practice Teaching of Agriculture in Secondary Schools. Two credit hours. The year. Prerequisite, Agricultural Education 101 or Agricultural Education 101 concurrent with 103. Mr. Johnson.

Observation and practice teaching of secondary agriculture in nearby cooperating rural high schools will be given under the supervision of critic teachers. Class-room instruction, laboratory exercises and home projects as conducted in these schools will receive emphasis.

AGRICULTURAL ENGINEERING

Office, 201 Machinery Laboratory

PROFESSOR RAMSOWER, ASSISTANT PROFESSORS IVES
AND McCUEN, MR. POTTER

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125, Mathematics 107 and Physics 109. Mr. Ramsower, Mr. Potter.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125 and Mathematics 107. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; com-

position of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

106. Drainage. Three credit hours. Second semester. Prerequisites, Mathematics 107 and Soils 152. Mr. Ramsower, Mr. Ives, Mr. McCuen, Mr. Potter.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth and distance apart. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit.

110. Advanced Farm Machinery. Three credit hours. First semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field and power machinery. Practice in assembling and disassembling some of the machines studied, together with problems and tests covering various features of design and operation.

107. Farm Power. Four credit hours. Second semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, tractors, steam engines, wind-mills and electric power.

108. Concrete Construction. Three credit hours. Second semester. Prerequisite, Mathematics 107. Mr. Ives.

Lectures and laboratory covering the making of forms, simple test of concreting materials, proportioning materials for different purposes, mixing and placing, reinforcement, brick work. Written reports will be required for each day's laboratory work.

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Ramsower, Mr. Ives, Mr. McCuen, Mr. Potter.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricul-

tural engineering. Work may be chosen pertaining to farm structures, drainage, farm power, concrete construction, or field machinery.

114. Design of Dairy Buildings. Two credit hours. Second semester. This course is designed for students specializing in Dairying, and must be preceded by Dairying 115 and Engineering Drawing 125. Mr. Ives.

A few lectures will be given relative to strength of materials and problems in design, but the greater part of the time will be devoted to the planning of ice-houses, milk-houses, dairy barns, cheese factories, condensories, manure pits, water supply and sewage disposal plants as related to the dairy business, following the specifications given in Dairying 115.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil and steam engines, tractors, and windmills.

AGRICULTURAL EXTENSION

Office, 115 Townshend Hall

PROFESSOR WHEELER

102. Extension Methods. Two credit hours. Second semester. Two recitations each week. Open only to seniors in the College of Agriculture. Mr. Wheeler.

An introduction to extension methods and a discussion of the forms of organization for carrying on extension work.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT, HOCKETT, AND SCHLESINGER,
MR. WOOD, MR. WITTKE

101-102. History of the United States. (1763-1918). Three credit hours. The year. Mr. Hockett, Mr. Schlesinger, Mr. Wood, Mr. Wittke.

American History 101 is given also during the second semester, and American History 102 during the first semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1918. Text-book, discussion and collateral readings.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE, ASSISTANT PROFESSORS BUCK AND
WARREN, MR. KNOUFF, MR. BAKER

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Baker.

Fishes, amphibians and reptiles.

102. Comparative Anatomy of the Vertebrates. Three or five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Elective. Prerequisite, Anatomy 101, or an equivalent. Mr. Baker.

Birds and mammals.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

Karyokinesis and the early development of fishes and amphibians.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Prerequisite, one year's work in biological science. Mr. Landacre.

The development of reptiles and birds.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to first year students. Mr. Landacre.

The histology and early development of the frog.

116. The Digestive System. Three credit hours. Second semester. One lecture and four laboratory hours each week. Elective for third or fourth year students. Prerequisite, one year's work in biological science. Mr. Landacre, Mr. Buck, Mr. Warren.

A study of the gross and microscopic structure of the digestive system and associated organs in one of the higher mammals and in man.

118. Elementary Comparative Anatomy of Vertebrates. Three to five credit hours. Second semester. One lecture and five to eight laboratory hours each week. Prerequisites, Zoology 101, Physiology 101 or an equivalent. Mr. Landacre, Mr. Knouff, Mr. Baker.

A preliminary study of the comparative anatomy and embryology of the vertebrates accompanied by careful dissection of the shark, frog and cat. This course meets the premedical requirements in anatomy.

ANIMAL HUSBANDRY

Office, Judging Pavilion

PROFESSORS PLUMB, KAYS, JACOBY AND COFFEY, MR. CONKLIN,
AND DEPARTMENT ASSISTANTS

135. Elementary Live Stock Judging. Four credit hours. Either semester. Second year. Two lectures and four laboratory hours each week. Mr. Coffey.

Students intending to give much attention to animal husbandry courses should take this course the first semester. Students taking but one course in animal husbandry are required to take this.

An elementary study of the relationship of form to function in horses, cattle, sheep and swine.

137. Principles of Feeding. Three credit hours. Either semester. Second year. Prerequisite, Animal Husbandry 135 and Agricultural Chemistry. Mr. Coffey.

An elementary study of digestion and assimilation, feeding standards, composition of feeding stuffs and feeding practices.

139. Horse Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Kays.

A general consideration of the breeds, breeding, feeding and management of horses.

141. Beef Cattle Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of beef cattle.

143. Swine Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Coffey.

A general consideration of the breeds, breeding, feeding and management of swine.

145. Dairy Cattle Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Plumb, Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of dairy cattle.

147. Sheep Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115.

A general consideration of the breeds, breeding, feeding and management of fine-wool and mutton sheep.

149. Advanced Breed Study. Four credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 139, 141, 143, 145. Mr. Plumb.

Special consideration given to the history and development of the more important breeds involving both text and lectures, with assignment reading and pedigree study.

151. Advanced Live Stock Judging. Three credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 149. Mr. Kays.

An advanced class for senior students who have had the more elemental instruction in judging. The purpose is to give a more detailed consideration to type and breed conformation, with emphasis on practice in groups and classes.

153. Meats and Meat Products. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 141, 147, 143. Mr. Conklin.

A study of the composition and value of meats; the slaughtering of farm animals and the methods of handling and preparing meats and the by-products of slaughter.

155. Live Stock Markets and Marketing. Three credit hours. First semester. Prerequisites, Animal Husbandry 135 and 137. Mr. Plumb.

The live stock markets, their organization methods and rules; methods of shipment and sale, etc. Considerable library work and investigation is required, and the course is handled after the manner of the seminary.

157. Animal Genetics. Four credit hours. Second semester. Lectures and one laboratory period. Prerequisites, Zoology 101, 102 and 115, and Animal Husbandry 135. Mr. Kays.

Advanced work in heredity, variation, etc., in its application to domestic animals. Special attention will be given to practices associated with breeding farm animals.

159. Wools and Other Animal Fibers. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 137, 147. Fourth year. Mr. Plumb.

The character and composition of wools and other animal fibers, the market classification, shearing, preparation for market, uses of fibers in manufacturing, etc.

161. Herd Book and Pedigree Study. Two credit hours. Second semester. Third or fourth year. Prerequisites, Animal Husbandry 135, 137, 149. Mr. Kays.

A study of herd book methods and pedigree composition.

163-164. Research and Thesis. Two to five credit hours. The year. For fourth year students only, or graduates specializing in Animal Husbandry. Mr. Plumb, Mr. Kays, Mr. Coffey.

Students will elect work in desired subjects after conference with the instructor in charge.

Students desiring work in Animal Nutrition, see Agricultural Chemistry 111-112.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and mar-

keting, construction of poultry houses, poultry diseases and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern states, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to visit the poultry plant morning, noon and afternoon, to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of livestock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

ARCHITECTURE

Office, 105 Brown Hall

PROFESSORS BRADFORD, CHUBB, AND SMITH, MR. HASKETT,
MR. RONAN

131. Elements of Architecture. Two credit hours. First semester. Prerequisite, Art 131 and Engineering Drawing 125.

132. Elements of Architecture. Two credit hours. Second semester. Prerequisite, Architecture 131.

133. History of Architecture. Three credit hours. First semester. Prerequisite, Architecture 132.

136. History of Architecture. Three credit hours. Second semester. Prerequisite, Architecture 133.

History of modern architecture.

111. Photography. Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. Principles of Architectural Composition. Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 203 Hayes Hall

PROFESSOR KELLEY, ASSISTANT PROFESSOR ROBINSON, MR. NORRIS,
MR. CHRISTENSEN, MISS TALBOT, MISS SMITH

131-132. Elementary Drawing. Two credit hours. The year. Four laboratory hours each week.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

Art 131 is given also during the second semester.

Art 132 is given also during the first semester.

133. Advanced Drawing. Two credit hours. Either semester. Prerequisite, Art 131-132. Four laboratory hours each week.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

136. Water Color Painting. Two credit hours. Either semester. Prerequisites, Art 133 and 141. Four laboratory hours each week.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. One lecture each week.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131 and 141. Miss Talbot.

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSORS MORREY AND STARIN, MRS. MASTERS,
AND DEPARTMENT ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mrs. Masters, and department assistants.

This course is a prerequisite to all the elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationship of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical bio-chemical actions.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mrs. Masters.

A study of the more important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation; also, in the lectures, ways of transmission and methods of protection against infectious disease; sanitation and the theories of immunity.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110 or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112 or equivalents. Mr. Morrey.

FOR GRADUATES

201-202. Research and Pathogenic Bacteriology.

203-204. Research in Agricultural Bacteriology.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLIOGRAPHY

Office, The Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogues and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS TRANSEAU AND SCHAFFNER, ASSISTANT PROFESSORS GRIGGS AND STOVER, MISS DETMERS, MR. SEARS, MR. SAMPSON, MR. WALLER, AND DEPARTMENT ASSISTANTS

101-102. General Botany. Three credit hours. The year. Two recitations and two laboratory hours each week. Mr. Griggs, Mr. Stover, Miss Detmers, Mr. Sears, Mr. Sampson.

A study of the structures and processes of plants, and their

relation to the environment. A general survey of the great plant groups.

107. Plant Histology. Two credit hours. First semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Miss Detmers.

The physical structure and properties of protoplasm are studied, then, in order, the cell, the tissues, tissue systems and finally the histological structure of the plant organs are taken up.

108. Ecological Anatomy. Two credit hours. Second semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Miss Detmers.

A study of plant structures in relation to environment.

110. General Dendrology. Two credit hours. First semester. One lecture and two laboratory hours each week. Mr. Griggs.

Text-book: Schaffner's Field Manual of Trees.

A study of trees and shrubs, with practice in the identification of woody plants, in both summer and winter condition. Students are required to prepare a dendrological herbarium.

116. Plant Pathology. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Stover.

Representative bacterial and fungous diseases of horticultural crops are studied in the laboratory. In the lectures, consideration is given to the natural symptoms and control of plant diseases.

120. Field Botany. Three credit hours. Second semester. One field trip and two laboratory hours each week. Prerequisite, Botany 101. Mr. Griggs.

Field and laboratory study of the local flora. A large share of the time is spent in practice in the identification of the plants native to central Ohio.

123. Morphology of Lower Plants. Four credit hours. First semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of algae, fungi, and bryophytes.

124. Morphology of Vascular Plants. Four credit hours. Second semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of ferns and seed plants.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors.

142. Dendrology of Conifers. Two credit hours. Second semester. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Schaffner.

A general study of conifers including identification, classification and distribution of North American species.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses are not open to freshmen and sophomores.

117-118. Plant Ecology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Transeau.

The ecological relations of the forests, prairies and deserts of North America. Field work on the local plant associations.

121. Plant Genetics. Three credit hours. First semester. One lecture, two laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the principles and methods of plant genetics are considered, including a study of fertilization and reproduction, hybridization, heredity, Mendelian laws, fluctuations and mutations.

127-128. Plant Pathology. Four credit hours. The year. Two lectures and four laboratory hours each week. Prerequisite,

Botany 101-102 and one additional year of some biological subject. Mr. Stover.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Transeau, Mr. Schaffner, Mr. Griggs, Mr. Stover, Miss Detmers, Mr. Sampson.

139-140. Advanced Plant Pathology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 127-128. Mr. Stover.

151. Plant Micro-Chemistry. Three credit hours. First semester. One lecture and four laboratory hours each week. Elective. Prerequisite, Botany 101-102 and one additional year of botanical work. Mr. Sampson.

A study of the chemical substances occurring in plant cells and the chemical changes accompanying plant processes and plant responses.

FOR GRADUATES

201-202. Research in Systematic Botany.

203-204. Research in Morphology and Cytology.

205-206. Research in Physiology and Ecology.

207-208. Research in Mycology and Plant Pathology.

209-210. Seminary in Botany.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON AND W. L. EVANS, ASSISTANT PROFESSORS BOORD AND DAY, MR. ADKINS, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Either semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. Either semester. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105 and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Either semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures and one quiz each week. Prerequisite, an acceptable course in general chemistry. Mr. Boord.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year.

Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours each week. Laboratory open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord, Mr. Adkins.

The preparation of typical organic compounds.

CIVIL ENGINEERING

Office, 108 Brown Hall

PROFESSOR ENO, MR. NEILSON

131. Surveying. Five credit hours. First semester. Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Neilson.

133. Sanitation, Drainage, Water Supply. One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSOR STOLTZ, MR. HOLDSON

101. Principles of Dairying. Four credit hours. Either semester. Prerequisite to all other courses in dairying. Mr. Stoltz.

Lectures will be given on the relation of dairying to general agriculture; the composition of dairy products and the laws

governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. Farm Dairying. Four credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Second semester. Prerequisites, Dairying 101 and Bacteriology 107.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Four credit hours. Either semester. Prerequisite, Dairying 101.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento and camembert cheeses. Practical work will be given in the manufacture of both hard

and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice Cream Making. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures will be given on the theory and practice of ice cream making. Laboratory work will consist of making ice cream and other frozen products.

***111. Dairy Mechanics.** Two credit hours. Either semester. Prerequisite, Dairying 101.

This course consists of one lecture hour and one three-hour laboratory period. The construction and operation of steam boilers, steam and gas engines, steam pumps, compressors, refrigerating machines, belting, pulleys, pipe fitting, and soldering, and the operation of steam and gas engines. It is intended to train the student to do the mechanical work in milk plants, cheese factories, creameries, etc.

113-114. Advanced Dairying. Two credit hours. The year. Prerequisite, Dairying 101. Mr. Erf.

Two lines of work are offered in this course. First, Economic Dairying. This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used. Second, Investigational Work. This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

115. Dairy Buildings. Two credit hours. First semester. Prerequisite Dairying 101. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories and re-

*Not given in 1919-1920.

frigerating plants. Must be followed by Agricultural Engineering 114.

116. Milk Condensing. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr Erf.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

121. Dairy Herd Management. Nine credit hours. Either semester. Prerequisite, Dairying 101-102, and permission of the instructor. May be scheduled only by men doing Cow Testing Association work. Mr. Erf.

The work of the course includes visiting not less than twenty herds for at least eight consecutive months. During these visits the milk of each cow is weighed and tested for fat and total solids, weighing feeds and calculating the cost, selecting profitable feeds, calculating feed costs, labor costs and determining other items of expense in order to arrive at the profit or loss of each cow in the herd. Suggestions for increased profits and improving the sanitary conditions must be incorporated in a monthly report.

119-120. Proseminary. One credit hour. The year. Prerequisite, Dairying 101.

Seminary on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

FOR GRADUATES

201-202. Advanced Dairying.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz and one laboratory period each week. First year, Three-year Course in Agriculture. Mr. Stoltz.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk,

skimmilk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Buttermaking. Three credit hours. Second term.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

(See Engineering Drawing)

ECONOMICS AND SOCIOLOGY

Office, 5 Page Hall

PROFESSORS HAGERTY, HAMMOND, LOCKHART, HUNTINGTON, RUGGLES, PARRY AND NORTH, ASSISTANT PROFESSORS WALRADT, MARK AND TAFT, MR. MCKENZIE, MR. BICE, MR. SHEPPARD, MR. WEIDLER, MR. COON, MR. BLOOR, MR. McJOHNSTON, AND DEPARTMENT ASSISTANTS

ECONOMICS

101-102. Principles of Economics. Three credit hours. The year. Not open to first year students. Should precede all courses in Economics except 132, 133. Concurrent 139. Mr. Hammond, Mr. Lockhart, Mr. Ruggles, Mr. Parry, and instructors.

A study of the laws of production, exchange, distribution and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Text-book, lectures and individual investigation.

Economics 102 is given also during the first semester. Mr. Walradt and instructors.

Economics 101 is given also during the second semester. Mr. Walradt and instructors.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102 or Economics 101-102. Miss Mark.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

139-140. Elements of Accounting. Three credit hours. The year. Two recitations and one two-hour laboratory period each week. Prerequisite, registration in Economics 101-102.

An introduction to practical accounting, including the preparation and interpretation of business statements.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 101-102. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans and financial administrations, currency legislation, and the development of banking institutions.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Mr. Hagerty, Mr. North, Miss Mark, Mr. McKenzie.

Not open to first year students.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading and individual investigations.

Sociology 101 is given also during the second semester.

Sociology 102 is given also during the first semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Mr. McKenzie.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman and Medieval periods. The modern family, its functions and its problems.

112. Preventive Philanthropy. Four credit hours. Second semester. Third year, Science Nursing. Mr. Hagerty.

A study of the institutions and methods for the promotion of thrift and good citizenship. Tenement house and child labor legislation, industrial education, social settlements, welfare work, parks and playgrounds, substitutes for the saloon, amusements, sanitation, civic improvements, etc.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN,
WILLIAMS, TURNBULL AND SVENSEN, MR. FIELD,
AND DEPARTMENT ASSISTANTS

101. Elementary Mechanical Drawing. Two credit hours. Either semester. Mr. French and department assistants.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Engineering Drawing 101. Lettering, orthographic, isometric and oblique projections. Mr. French and department assistants.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Engineering Drawing 125.

125. Mechanical Drawing. Two credit hours. Either semester. College of Agriculture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Engineering Drawing 127.

Engineering Drawing 127 and 128 are required in Home Economics, third year.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, GRAVES AND KETCHAM, ASSISTANT
PROFESSORS COOPER, BECK, ANDREWS AND PERCIVAL,
MR. CRAIG, MR. DISHONG, MR. WILEY, MISS ROB-
INSON, MR. FOLEY, MISS DOLLINGER, MR.
GYSAN, AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101, 104. Mr. Beck, Mr. Dishong.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101, 104, 105. Mr. Beck, Mr. Dishong.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor, Mr. Graves, Mr. Andrews. Second semester: Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant and Poe; of Hawthorne, Emerson, Whittier, Longfellow and Lowell; and of Walt Whitman; with a brief survey of recent literature.

141. Nineteenth Century Poetry. Three credit hours. First semester. No prerequisite course. Mr. Taylor, Mr. Cooper, Mr. Andrews.

Wordsworth, Shelley, Keats, and their contemporaries.

145. Nineteenth Century Prose. Three credit hours. First semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Coleridge, Lamb, Landor, DeQuincy, Hazlitt and Carlyle.

146. Nineteenth Century Prose. Three credit hours. Second semester. No prerequisite course. First year, Science Nursing. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Arnold, Ruskin, Newman, Pater, Stevenson, and in recent and contemporary essayists.

FOR SHORT COURSES ONLY

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation. Mr. Dishong.

PUBLIC SPEAKING

101. Public Speaking. Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Wiley.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

102. Debating. Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Wiley.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

ENTOMOLOGY

(See Zoology and Entomology)

EUROPEAN HISTORY

Office, 204 University Hall

PROFESSORS SIEBERT, McNEAL, AND PERKINS, ASSISTANT
PROFESSORS HARRIS AND WASHBURNE, MR. KNIPFING

101. Medieval History. Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris, Mr. Washburne, Mr. Knipfing.

102. Modern History from 1500 A. D. Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Harris, Mr. Washburne, Mr. Knipfing.

European History 101 is given also during the second semester.

European History 102 is given also during the first semester.

FARM CROPS

Office, 101 Horticulture Building

PROFESSORS PARK AND WILLIAMS (Non-Resident), ASSISTANT
PROFESSOR WILLARD, AND DEPARTMENT
ASSISTANTS

101. Field Crop Production. Four credit hours. Either semester. Three lectures and one laboratory period each week. Prerequisite, Botany 101-102 or equivalent. Mr. Willard.

A study of the history, adaptation, culture, uses and distribution of the cereal, forage and miscellaneous crops. Laboratory study of the principal types and varieties.

109. Cereal Crops. Three credit hours. First semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101.

An advanced study of the characters, distribution, production and uses of the principal cereal crops. Emphasis will be placed upon grain standardization and marketing. Lectures, reports, trips and laboratory exercises.

111. Forage Crops. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101. Mr. Willard.

Lectures and recitations on the characters, uses and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification of forage crops and in seed identification.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

113. Plant Breeding. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101 and Zoology 115. Mr. Park.

The application of genetic principles to the improvement of cultivated plants and advanced study of special topics in plant genetics. The technique of breeding certain typical crops.

123. Crop Ecology. Two credit hours. First semester. Two lectures each week. Prerequisite, Farm Crops 101. Mr. Willard.

The relations of our economic plants to their environment. A study of fundamental factors in crop production, and their relation to growth and yield. Investigation of special problems, lectures, reports and assigned readings.

112. Special Crops. Two credit hours. Second semester. Prerequisite, Farm Crops 101.

Chiefly individual study of special crops in which the student may be interested, reports to be presented to the class.

119-120. **Minor Investigations.** Two to four credit hours. The year. Prerequisite, Farm Crops 101, one advanced course in Farm Crops, and permission of the instructor. Mr. Park, Mr. Willard.

FOR GRADUATES

201-202. **Research in Plant Breeding and Crop Production.**

203-204. **Seminary in Farm Crops.**

For description of graduate work in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. **Crop Production.** Four credit hours. The year.

The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

GEOLOGY

Office, 104 Orton Hall

PROFESSORS BOWNOCKER AND CARMAN, ASSISTANT PROFESSORS HILLS AND TUCKER, MR. BEVAN, MISS MORNINGSTAR

103. **Inorganic Geology.** Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models and museum materials.

104. **Historical Geology.** Three credit hours. Second semester. Prerequisite, Geology 101 or 103. Mr. Carman.

A general course in paleontological and stratigraphical geology, illustrated by lantern views, maps, and specimens. The development of organisms and the classification and distribution of the geological formations, especially those of Ohio, are considered. After the first of April, some of the Friday lectures will be replaced by field trips on Saturdays.

151. Geology. Three credit hours. Either semester. Two recitations or lectures and one two-hour laboratory period each week. Agriculture, first year. Mr. Bevan.

Physical and economic geology. The principles of geology will be presented in the light of their practical bearing upon agriculture. The common rock-forming minerals and rocks and geologic maps are studied in the laboratory; while in the field various illustrations of geological processes are studied.

162. Elementary Physiography. Four credit hours. Second semester.

The physiographic features of the earth's surface and the agencies producing them; the atmosphere and the ocean. Recitations, lectures, map work and field work.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Field Geology. Three to five credit hours. First semester. Prerequisite, Geology 101 or 103 and 104 or 151. Mr. Carman.

Lectures, assigned readings, field trips and laboratory work at time to be arranged. Field trips generally on Saturdays while the weather permits, laboratory work the remainder of the semester.

A study of the geological formations readily accessible from Columbus, and identification of fossils characteristic of different formations. This course is intended to acquaint the student with the ordinary methods of field investigation, and involves the collection and identification of specimens, the measurement of geological sections, and the preparation of a report describing the region studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Hills.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Two to five credit hours. The year. Prerequisite, Geology 101 or 103, and 104 or 151. Mr. Carman, Miss Morningstar.

Careful training in systematic classification which may be used in the philosophical study of the development of animal life, or as a means of becoming acquainted with the fauna and flora that characterize the various geological formations. At first the student devotes some time to conchology, studying recent shells in which the characters used in classification are well preserved, and after this preliminary work fossils are studied. Fossils afford the most reliable data for identifying and correlating geological formations, and the critical study of fauna is a field especially adapted to independent research. Laboratory, museum, and field work.

167. Economic Geology. Three credit hours. First semester. Prerequisite, Geology 103 and 104. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin. The coals of the Appalachian field.

GERMAN

Offices, 317 and 318 University Hall

PROFESSORS M. B. EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS, BARROWS, AND BUSEY, MR. KOTZ

101-102. Elementary German. Four credit hours. The year. All instructors.

German 102 is given also during the first semester.

German 101 is given also during the second semester.

103. Intermediate German. Four credit hours. Either semester. Prerequisite, German 101-102 or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose and a classical drama supplemented by discussions of syntax; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Either semester. Prerequisite, German 103 or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units in German.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, Advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 100 Hayes Hall

PROFESSOR ANDERSON, MR. MARINO

101-102. History of Education. Three credit hours. The year. Prerequisite, Psychology 101-102. Mr. Anderson.

Text: Graves's *A History of Education* (three volumes) and *Graves's Great Educators of Three Centuries*.

HOME ECONOMICS

Office, 120 Home Economics Building

PROFESSORS WHITE AND VAN METER, ASSISTANT PROFESSOR HATHAWAY, MRS. WALKER, MISS TUCKER, MISS SKINNER, MISS LINDER, MRS. ADAMS, MISS KAUFFMAN, MISS GROMME, MISS MacCONATHY, MISS HESSE, MISS MILLER, AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Two lectures, one quiz, and two laboratory periods each week. Prerequisite, Chemistry 106 or 110. Miss White, Miss Hesse, Miss Junkermann, Miss Hays.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost and value of the nutrients in the various food materials.

104. Sanitation. Three credit hours. Either semester. Three lectures each week. Prerequisite or concurrent, Bacteriology 107. Miss Linder.

A study of the interdependence of home and public agencies in securing and promoting sanitary and hygienic measures; location and construction of the house, water supply, plumbing, heating, ventilation, lighting, and home nursing.

108. Teaching of Home Economics. Two credit hours. Second semester. Prerequisites, Home Economics 101-102, 111-112, Psychology 101. Miss Van Meter, Miss Hathaway, Mrs. Adams.

This course is designed for students intending to teach home economics. Survey of home economics, examination of courses of study, lesson-plans and study of various types of schools.

111-112. Textiles. Two credit hours. The year. One lecture and one laboratory period each week. Prerequisite or concurrent, Art 119. Mrs. Walker, Miss Tucker, Miss De Vere.

The study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway, Miss Miller.

A study of the relation of economics, hygiene, and art to clothing. The drafting and designing of patterns, the selection of materials, and garment construction.

116. Dress. Three credit hours. Second semester. One lecture and two laboratory periods each week. Miss Hathaway, Miss Miller.

Continuation and amplification of Home Economics 113. Outline of history of costume and continuation of the study of selection and combination of materials in their application to dress.

The lecture may be taken as a one-hour course without the laboratory.

118. The House. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Art 131, Home Economics 112. Home Economics 104, Economics 101, Art 141, either prerequisite or concurrent. Miss Tucker.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. The House. Three credit hours. Either semester. Three lectures each week. Continuation of 118. Prerequisites, Economics 102, Art 141, Home Economics 102, 118, 104 or 110. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

The Home Economics practice apartment where the students live in groups for a period of time, affords opportunity for practice in household management.

121. Food Problems. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequi-

sites, Chemistry 106 or 110, Home Economics 101-102, and consent of instructor. Miss Skinner.

Problems of markets, fuels, equipment and labor involved in selection, purchase, preparation and serving of food.

123-124. Practice Teaching in Home Economics. Two credit hours. The year. Both semesters must be elected. One lecture and a minimum of thirty class exercises in practice teaching during the year. Prerequisite, Home Economics 108. Mrs. Adams, Miss Kauffman, Miss Gromme, Miss MacConathy.

Observation work, arranging courses of lessons, practice teaching.

Students who desire to prepare for teaching in Smith-Hughes vocational schools are advised to take Home Economics 105, 110, 113, 116.

125-126. Survey of Home Economics. Three credit hours. The year. One lecture and two laboratory periods each week. Required in curriculum for Public Health Nurses and elective for certain irregular students by consent of instructor. Miss White.

Principles of the selection and preparation of normal low cost dietaries, marketing, feeding of infants, house sanitation, household management, economic and hygienic aspects of textiles and clothing.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Proseminary. Two to five credit hours. Either semester. One lecture each week. Prerequisite, eighteen hours of required home economics work. Miss Van Meter.

Readings and reports on home economic topics. Problems assigned for individual research.

106. Proseminary. Two to five credit hours. Second semester. One lecture each week. Continuation of Home Economics 105. Prerequisite, Home Economics 105, and consent of the instructor. Miss Van Meter.

Special research continued. Reports and conferences.

110. Dietetics. Four credit hours. Either semester. Two lectures and two laboratory periods each week. Prerequisite,

Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Skinner.

A study of the chemical, physiological and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Translation of standard dietaries into food materials and some exercises in making dietary studies and in preparing food for the sick.

FOR GRADUATES

201-202. Research in Home Economics.

For description of graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture Building

PROFESSORS PADDOCK AND MONTGOMERY, ASSISTANT PROFESSORS SCHERER, ELWOOD, HOTTES, AND ALLEN, MR. CHARLES, AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Three lectures and two laboratory hours each week. Required as a prerequisite for all horticultural courses except 118 and courses numerically listed between 151 and 172. Required of all students specializing in horticulture. Credit cannot be received for this course if the student has already passed Horticulture 118. No prerequisite.

A study of plant growth with special reference to orchard, garden, greenhouse and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all students majoring in Horticulture. Credit cannot be given for this course if Horticulture 118 has been passed. Prerequisite, Horticulture 101.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 101-102. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography, site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106 or equivalent. Mr. Hottes.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticised and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all agricultural students. Not open to students who have credit for Horticulture 101 or 120. Mr. Montgomery.

Vegetable gardening, fruit growing and ornamental planting adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 105, 106.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and

commercial value. Practice is also given in judging, grading, and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Prerequisite, Horticulture 101 and 102. Mr. Montgomery.

A study of the history and development of vegetable gardening, the area and extent of the industry, and the several general factors concerned in the production and utilization of vegetables.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. By-Products. Three credit hours. First semester. Prerequisite, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods of the preservation of surplus garden and orchard products. The theory and art of canning, pickling and preserving, the making of kraut, cider, and vinegar is considered from a commercial standpoint.

FLORICULTURE

141-142. Commercial Floriculture. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101, 132. Mr. Hottes.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. The Flower Shop. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations and house decorations, together with the establishment and management of a flower shop.

144. Conservatory and Bedding Plants. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding. The class will participate in a day excursion.

145. Garden Flowers. Three credit hours. First semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The general subject of gardening, especially rose, water and rock gardens with attention given to the propagation and growth of garden annual and perennial flowers as adapted to the florist's trade.

146. School Gardens. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 101. Mr. Hottes.

A course designed to promote the efficiency of school and vacant-lot gardens. Involving a study of plans, materials and culture of flowers and vegetables suitable for school-garden work.

147-148. Systematic Floriculture. Three credit hours. The year. Two lectures and two laboratory hours each week. Mr. Hottes.

A study of the origin, history and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

150. Elementary Landscape Design. Three credit hours. Second semester. One lecture and two laboratory periods each week. Required in the second semester, second year of the curriculum in Landscape Architecture. Mr. Allen.

An elementary study of the principles of landscape design.

151-152. Plant Materials. Two credit hours. The year. Landscape Architecture, second year. Prerequisite, Botany 101-102. One lecture and two laboratory hours each week. Mr. Allen.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year. Mr. Allen.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Open to any student. Recommended for third year students in Floriculture. Mr. Allen.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours each week. Landscape Architecture, third year. Prerequisite, Horticulture 154. Mr. Allen.

This course takes up the general study of practical problems in design, a study of the important works of landscape

architecture and the making of finished plans, reports and working-drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Four credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 157-158. Mr. Allen.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152. Mr. Allen.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Allen.

A study of the methods adopted in compiling surveys, especially for landscape use; field practice with instruments.

165. Civic Design. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Allen.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public squares, street intersections, parks and playgrounds.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164. Mr. Allen.

This course covers in detail a study of the various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162. Mr. Allen.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective. Mr. Allen.

172. Proseminary in Landscape. One credit hour. Second semester. Open to fourth year and graduate students. Mr. Allen.

Discussion of reports from practical landscape problems.

FARM FORESTRY

180. Farm Woodlot. Four credit hours. Either semester. Three lectures with occasional recitations and one three-hour laboratory period each week. Elective. Mr. Scherer.

It is the purpose of this course to show the significance of the forest and its place in farm management, the growth of trees and their identification; the methods of handling woodlands, both natural and artificial; the protection of the forest; the measuring and scaling of trees and logs; the utilization of products and by-products; the preservation of farm timbers, and the influences of the forest.

181-182. Arboriculture and Ornamental Planting. Three credit hours. The year. Two lectures and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will deal with the selection of ornamental trees; the transplanting of large trees; the pruning and shaping of trees; and the care of diseased and injured trees.

This course is especially adapted for students in landscape architecture, agriculture and horticulture.

183. Lumber. Three credit hours. First semester. Two lectures and one three-hour period of laboratory or field work. Elective. Mr. Scherer.

A study of the methods and means of distinguishing woods, both growing and sawed; the cutting and sawing of lumber; grading and seasoning; diseases and the methods of preserving lumber, etc.

This course is especially adapted to the needs of students in manual training, architecture and engineering.

184. Principles of Forestry. Three credit hours. Second semester. Three lectures with occasional recitations. Elective. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry; the problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it,—all serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary for tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Adapted to students of other departments.

FOR GRADUATES

201-202. Research Work.

For description of graduate course in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and steriliza-

tion, soils, temperatures, fertilizers and the general culture of the important greenhouse vegetable crops.

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size and arrangement of garden space, seeds, planting and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes, such as wind-breaks, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

INDUSTRIAL ARTS

(See Shopwork)

JOURNALISM

Office, 225 Shops Building

PROFESSORS MYERS AND HOOPER

101-102. News-collecting and News-writing. Three credit hours. The year. Two lectures and three laboratory hours each week. Mr. Myers.

Attention is given to vocabulary and style in the gathering and writing of news for publication in the University daily newspaper, which is organized and operated as nearly like a city newspaper as possible.

Journalism 101 is given also during the second semester.

Journalism 102 is given also during the first semester.

For other courses in this department see the Bulletin of the College of Commerce and Journalism.

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND RASOR, ASSOCIATE PROFESSOR
ARNOLD

107. Mathematics for Students of Agriculture. Three credit hours. Either semester. Mr. Bohannon, Mr. Rasor, Mr. Arnold.

The elements of trigonometry and curve-plotting, numerical computation and algebraic processes germane to agriculture.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Text-book: Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be

given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, 104 Hayes Hall

LIEUTENANT COLONEL LEONARD, U. S. A., CAPTAIN HALSTEAD,
U. S. A., SERGEANTS MADDEN AND O'ROURKE, MR. BRUDER

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all male students, both special and regular, to drill during two years unless excused by the Military and Gymnasium Board. This work is under two commissioned officers of the regular army, detailed for the purpose. The Military Department is open during five days each week throughout the year.

1. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring) military drill; four months, three hours each week (winter) of class-room instruction in drill regulations. Target practice at any open hour during the afternoons of the winter months, at 100, 200 and 300 yards. Lecture, one hour each week by the President, upon topics of common interest to the student body.

2. Military Drill. One credit hour. Five months, three hours each week (divided between fall and spring), in extended order and guard duty; four months, three hours each week (winter) of class-room instruction in Articles of War, guard

*Not given in 1919-1920.

manual, and field service regulations. Target practice at any open hour of the afternoon of the winter months, at 500, 600 and 800 yards.

PHYSICAL EDUCATION

Office, The Gymnasium

PROFESSORS ST. JOHN, WILCE, CASTLEMAN, AND NICHOLS, ASSIST-
ANT PROFESSOR TRAUTMAN, MR. OHLSON, MR. BIRD

MEN

101-102. Physical Education. One credit hour. The year. Two hours each week. Required of all first year students in this college. During the first semester the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

WOMEN

ASSISTANT PROFESSOR MEYER, MISS HAMMETT, MISS FISHER,
MISS MESLOH

131-132. Physical Education. One credit hour. Four hours each week. Required of all women students during first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium Exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

133-134. Physical Education. One credit hour. Four hours each week. Required of all women students. For second year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE, EARHART, AND BLAKE, ASSISTANT PROFESSOR HEIL, MR. DITTO, MR. SERVICE

103-104. General Physics. Four credit hours. The year. Recitations, lectures and laboratory. A non-mathematical course for students who have no entrance credit in physics. Mr. Ditto, Mr. Service.

105-106. General Physics. Four credit hours. The year. Three recitations and one three-hour laboratory period. Pre-requisite, entrance credit in physics. Mr. Earhart, Mr. Blake.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture.

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY

Office, 104 Biological Hall

PROFESSORS BROOKS AND BLEILE, ASSISTANT PROFESSORS SEYMOUR AND McPEEK, MR. DURRANT, AND DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including demonstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

104. Chemical Physiology. Three credit hours. Second semester. Prerequisite, Physiology 101-102. Mr. Bleile.

A laboratory course with lectures and recitations. The course includes laboratory study of foods, digestion, secretions, excretions and blood with a short period devoted to urinalysis.

135-136. General Physiology. Four credit hours. The year. Two lectures and four laboratory hours each week. Elective. Prerequisite, a general course in chemistry. Not open to freshmen. Mr. Bleile, Mr. Durrant.

A general course in physiology including lecture and laboratory work for students who have had some training in chemistry.

PSYCHOLOGY

Office, 403 University Hall

PROFESSORS ARPS, PINTNER, AND WEISS, ASSISTANT PROFESSORS BRIDGES, CRANE, AND GOUDGE-CRANE, MR. EVANS, MR. CULLER, MISS COY, MISS ROGERS, AND
DEPARTMENT ASSISTANTS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. All instructors.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

PUBLIC HEALTH AND SANITATION

PROFESSOR McCAMPBELL, ASSISTANT PROFESSORS HAYHURST AND PATERSON, MR. VAN BUSKIRK

SCIENCE NURSING

101. Elementary Nursing. Three credit hours. Summer term following second year of Science Nursing Curriculum. Three lectures each week. Total 36 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Personal hygiene; charts and charting; reception of patients; preparation of patients' rooms; the care and use of equipment;

the care, use and preparation of instruments; the care and handling of patients; bandaging and massage.

102. History and Ethics of Nursing. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Definition; professional ethics; hospital ethics and etiquette; the school uniform; the social life of the student; required reading; the spirit of nursing; and a brief history of nursing.

103. Drugs and Solutions. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum.

Elementary discussion of drugs, their sources, crude forms, and preparation; practical problems in weights and measures; and the preparation of solutions.

104. Hospital Ward Duty. Seven credit hours. Summer term following second year of Science Nursing Curriculum. Seven hours of hospital ward duty each day for six days each week. Total 504 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

The student will serve as a probationer in the wards of the Protestant Hospital.

106. Public Health Nursing. Two credit hours. Second semester. Two lectures or recitations each week. Total 64 hours.

This course takes up the historical development of nursing, the organization of the professional field, and the place of nursing in its relation to the various forms of medico-social and public service. It discusses the best methods of administration as to the supervision and arrangement of practical work, classification and preservation of records and the presentation and publication of reports. This course is intended also to give a general grasp of the problems in nursing to be met in families where there is sickness with poverty; the measures to be followed in various types of families, to preserve unity, to relieve immediate needs and to teach hygiene, preventive methods and

the handling in the home of acute, chronic or contagious illness. The special problems of nursing in medico-social service, industrial welfare and rural districts are considered.

110. Preventive Medicine. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Mr. McCampbell.

The important facts and fundamental principles in preventive medicine are given consideration. The sociological aspects and the methods used in public health work are emphasized. Special attention will be given to the methods and procedures for preventing the occurrence of the communicable diseases as well as the control of this group of diseases. The non-infectious diseases will also be discussed from the standpoint of preventive medicine and the public health.

111. Elements of Pathology. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

A lecture course covering the elementary principles; retrogressive, inflammatory and regenerative reactions of the tissues and the effects of special infectious agents upon the body; tumors.

113. Medical Nursing. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Hygiene of the sick-room, diseases of the blood, of organs of circulation and lymphatics, of organs of respiration, of digestion and of excretion.

115. Surgical Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Principles of septic and anti-septic surgery; fractures; surgical emergencies; pre-operative considerations; post-operative considerations; surgical tuberculosis; tumors; surgical condi-

tions of the head, neck, chest, stomach, gall bladder, intestines, kidney and bladder, and fistulae and plastic surgery.

117. Materia Medica. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Drugs, systems of measurement, the care and use of equipment, administration, solutions; important drugs; the medicine closet.

119. Hospital Ward Duty. Ten credit hours. First semester. Seven hours each day; six days each week. Total 672 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of Science Nursing Curriculum.

A student performs the duties of a nurse in training in the wards of the Protestant Hospital.

122. Proseminary in Case Studies. Two credit hours. Second semester. Two conferences each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Assignment to each student of at least six cases embracing medical, surgical, obstetrical, and pediatrial nursing for complete study and the submission of written reports as the basis for class discussion.

123. Hospital Ward Duty. Eight credit hours. Summer term following the third year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first three years of Science Nursing Curriculum.

The student performs the duties of a nurse in training in the wards of the Protestant Hospital.

124. Public Health Problems. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Mr. McCampbell, Mr. Hayhurst.

This course covers in a rapid survey the health hazards of industrial applications and the accepted standards in regard to

the individual and to his environments. Occupational diseases and those diseases partly occupational are considered in their various relations. The principles of sanitary engineering science, municipal sanitation, and the methods used in the public health laboratory are also covered in this course.

125. Gynecological Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition and brief history of gynecology; diseases of reproductive organs; of the genito-urinary tract; examinations and gynecological operations.

127. Orthopedic Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition; deformities; apparatus used in orthopedic work; care of patients in plaster casts and braces; orthopedic operations.

129. Obstetrical Nursing. Two credit hours. First semester. One lecture and one demonstration each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Mechanism and management of normal labor; after-care of the mother; care and artificial feeding of the new-born infant; physiology and hygiene of pregnancy; pathological pregnancy.

131. Nursing in Diseases of Infants and Children. Two credit hours. First semester. Two lectures each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The normal child; nursing of sick children; diseases of digestive, respiratory, circulatory, nervous and genito-urinary systems; diseases of the blood and lymphatic glands; surgical conditions in children; social aspects of children's diseases.

133. Nursing in Communicable Diseases. Two credit hours. First semester. Two lectures each week. Total 32 hours.

Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Specific infectious diseases; the conduct of a case of communicable disease; diphtheria, cerebrospinal meningitis, acute poliomyelitis, lobar pneumonia, influenza, common colds, follicular tonsillitis, tuberculosis, scarlet fever, measles, chicken pox, whooping cough, mumps, gonococco-vaginitis, syphilis, gonorrhea, erysipelas, smallpox and typhoid fever.

135. Nursing in Diseases of the Eye, Ear, Nose and Throat. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Anatomy and physiology of the head with special reference to the eye, ear, nose and throat; special diseases; methods of examination; methods of treatment; operations; solutions, strength and uses.

137. Operating Room Technic. One credit hour. First semester. One lecture or demonstration each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The operating room; instruments and supplies; preparation for operation; local preparation of patient for operation; and preparation and duties of the nurse.

139. Hospital Ward Duty. Six credit hours. First semester. Four ward duty hours each day; twenty-four each week. Total 402 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

141. Hospital Ward Duty. Eight credit hours. Summer term following fourth year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first four years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

ROMANCE LANGUAGES AND LITERATURES

Office, 305 University Hall

PROFESSORS BOWEN AND INGRAHAM, ASSISTANT PROFESSORS
HAMILTON, CHAPIN, PEIRCE, GUIGOU, AND HACKER, MR.
GUTIERREZ, MR. BERTHEMY, MR. TAILLIART, MRS.
ARTHUR, MR. WILLIAMS, MISS HIER, MR.
YOUNG, AND DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year.
All instructors.

Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies.

Stress is laid first upon the acquisition of a correct pronunciation, after which the energy of the student is directed toward the attainment of (1) an accurate reading knowledge of the language, and (2) facility in speaking and understanding it. Grammar and composition are made to contribute to these ends.

French 101 is given also during the second semester.

French 102 is given also during the first semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102 or equivalent. All instructors.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

French 103 is given also during the second semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, French 103. Mr. Berthemy.

A course of rapid reading introductory to the vocabulary of scientific literature.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Elementary reading as a basis for oral and written practice.

Spanish 101 is given also during the second semester.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

103-104. Intermediate Spanish. Four credit hours. The year. Prerequisite, Spanish 101-102 or equivalent. Mr. Chapin, Mr. Gutierrez.

A more comprehensive survey of the forms and syntax with more advanced reading as a basis for practice in speaking and writing.

RURAL ECONOMICS

Office, 209 Hayes Hall

PROFESSOR FALCONER, ASSISTANT PROFESSOR T. D. PHILLIPS
AND ERDMAN, MR. LANTIS

101. Farm Accounting. Two credit hours. Either semester. Mr. Phillips.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

103. Farm Management. Four credit hours. First semester. For third and fourth year students. Prerequisite, Economics 101. Mr. Falconer.

Lectures, recitations and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Three recitations each week. Prerequisite, Economics 101. For third and fourth year students. Required of all students who are held for a semester's work in Rural Economics.

The economics of agriculture with special reference to the problems of farm management. The economics of the produc-

tion and marketing of agricultural products, the state and the farmer, the relation of agriculture to other industries and the social relations of agricultural communities are considered.

110. Rural Community Life. Three credit hours. Second semester. Prerequisites, Economics 101 or Sociology 101. Mr. Lantis.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

113. The Distribution of Farm Products. Three credit hours. First semester. Prerequisite, Economics 101. Mr. Erdman.

A study of the distribution of agricultural products, organized methods of marketing, and prices.

116. Cooperation in Agriculture. Two credit hours. Second semester. Two recitations. Prerequisite, Rural Economics 104. Mr. Erdman.

A study of agricultural cooperation, mainly as found in the United States. The types of cooperative marketing, manufacturing and purchasing organizations, collective bargaining, cooperative credit and insurance.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Advanced Farm Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or its equivalent, and Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problems of farm organization and operation.

105. Historical and Comparative Agriculture. Two credit hours. First semester. Prerequisite, Rural Economics 103 and 104. Mr. Falconer.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

111. Advanced Farm Management. One credit hour. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. Reference and assigned work. The study of accumulated farm management data.

114. Land Tenure. Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Falconer.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

118. Rural Community Development. Two credit hours. Second semester. Two recitations. Prerequisite, Economics 101 or Sociology 101 and Rural Economics 104 or its equivalent. Mr. Lantis.

The characteristics of rural people, the opportunities for rural leadership and qualities necessary for it, how to make a rural survey, rural social organizations and various rural social problems are considered. The preparation of written reports on assigned subjects will be required.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Office, 125 Shops Building

PROFESSOR SANBORN, ASSOCIATE PROFESSOR W. A. KNIGHT, MR. BEEM, MR. FOUST, MR. DENMAN, AND DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Denman, Mr. Senn.

Practice in carpentry, including sawing, planing, mortising, framing, and other work involving the use of the ordinary carpenter tools; the making of simple patterns for castings. The practice work is directly applicable to country life.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire and tools, practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; the making, hardening and tempering of steel punches, drills and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

SOILS

(See Agricultural Chemistry and Soils)

SPANISH

(See Romance Languages)

SURVEY OF AGRICULTURE

Office, 203 Townshend Hall

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester. The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR WHITE, ASSISTANT PROFESSOR LAMBERT

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common, sporadic and infectious diseases, minor surgery, castration, horseshoeing and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. Lambert.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation

of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS OSBURN AND OSBORN, ASSOCIATE PROFESSOR HINE,
ASSISTANT PROFESSORS BARROWS, KRECKER, AND METCALF,
MR. KOSTIR, MR. DE LONG, MISS MOSHER, AND
DEPARTMENT ASSISTANTS

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osburn, Mr. Barrows, Mr. Krecker, Mr. Kostir, Mr. De Long and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

Zoology 101 is given also in the second semester.

115. General Principles of Heredity. Three credit hours. Either semester. Three lecture periods. Prerequisite, Zoology 101-102 or Botany 101-102 or equivalent. Mr. Barrows.

A study of heredity in animals and plants, to serve as an introduction to heredity, as a basis for advanced work in plant and animal breeding and as an aid in the analysis of biological and sociological problems into which the question of heredity enters. The subject will be presented in lectures, illustrated with lantern slides and actual specimens. Exercises in the form of problems will be assigned. The different types of heredity studied will be chosen from the animal and plant material which best illustrates the subject. Hereditary characters found in

man will be used to a large extent. The course will be made as simple and practical as the subject will permit. Present day theories and technical applications will be left for discussion in the more advanced courses to which they properly belong.

121-122. Advanced Zoology of Invertebrates. Three credit hours. The year. One lecture and two laboratory periods. Elective. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits and relationships of invertebrate animals together with the consideration of important biological principles. Lectures, laboratory exercises, and occasional field trips.

123. Microtechnic. Two credit hours. First semester. Two laboratory periods. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A course in the theory and practice of microscopic methods, including fixing, embedding, sectioning and staining of animal tissues, making permanent preparations, and special manipulation of microscopic accessories. Laboratory work, assigned readings and conferences.

This course is designed for students intending to major in Zoology or those intending to teach in secondary schools.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

124. Animal Tissues. Two credit hours. Second semester. Two laboratory periods. Elective. Prerequisite, Zoology 121-122 or equivalent. Mr. Osburn, Mr. Kostir.

A comprehensive study of the origin and evolution of different types of cells and tissues in the animal kingdom. Dahlgren and Kepner's Principles of Animal Histology will be used as a guide. Laboratory work, assigned readings and conferences.

129-130. Advanced Studies in Animal Heredity. Two to five credit hours. The year. Prerequisite, Zoology 115. Mr. Barrows.

Part of this course will be devoted to the study of recent advances in the field of animal heredity but a large part of the

work will consist in the breeding of animals in the laboratory and the analysis of data collected.

153-154. Quantitative Studies in Animal Behavior. Two to five credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Barrows.

Devoted especially to insects. Required in the four-year course in Entomology. Elective to other students.

158. Animal Parasitology. Three credit hours. Second semester. Prerequisite, Zoology 101-102, 121-122, or equivalent or concurrent with 122. Mr. Krecker.

A consideration from the zoological standpoint of the parasitic forms in all animal phyla exclusive of insects (for which see Entomology 149), effects upon the host and the origin of parasitism. Laboratory studies of parasites and their life histories.

159-160. Animal Ecology. Three to five credit hours. The year. One lecture and laboratory periods governed by the number of hours of course scheduled. Prerequisite, Zoology 101-102 and one additional year of a biological science. Mr. Krecker.

A study of animals in their habitats and of the factors involved. Field work, lectures and laboratory.

FOR GRADUATES

201-202. Seminary in Zoology.

223-224. Invertebrate Embryology.

241-242. Research Work.

247-248. Invertebrate Zoology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102, or equivalent. Mr. Metcalf and assistants.

An elementary course on structure, physiology, development and habits of insects, as a basis for insect control and for special study in entomology; followed by a general systematic survey

of insects, mites and ticks with special attention to beneficial species and those injurious to farm, orchard, garden, forest, household, mill and storehouse and the health of man and domestic animals.

Lectures, quizzes, problems and laboratory work on general anatomy, life-stages, field observations of habits and damage and the preparation and application of remedial measures. Students are required to prepare a collection. Those desiring to collect specimens in advance should get printed instructions from the department.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Special Entomology. Four credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

A consideration of the various subdivisions of entomology, including phylogeny, classification, anatomy, physiology, embryology, metamorphosis, adaptation, behavior, distribution, dispersal, biological, and ecological relations, remedial and preventive measures.

Laboratory and field studies of life-histories, collection and classification, greenhouse pests, scale insects and other special groups; with practice in making notes on observations, keeping records, planning and conducting an investigation and preparing manuscript and illustrations for publication.

Adapted for students intending to undertake investigation or teaching in entomology.

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings and preparation by each student of report or review upon some publication. Intended to familiarize the student with past and current publications

and give him command of the published records in his field of study.

148. Entomology-Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Osburn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of a selected group or groups of insects.

150. Forest Entomology. Three credit hours. Second semester. Prerequisite, one year of entomology. Mr. Metcalf.

Lectures, reading, field work and preparation of collections covering in detail the insects affecting forest, shade and ornamental trees. Especially designed for forestry students who wish to do advanced work in entomology, but open to all students properly prepared who are interested in forest insects.

155-156. Entomology. Three credit hours. The year. Required in the course in Forestry. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

151-152. Insect Control. Three credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

Principles of economic entomology, utilization of parasitic and predaceous forms, entomophagous fungi and bacteria, circumvention and exclusion, cultural methods, traps and trap crops, heat, animal dips, insecticides, insecticide machinery and accessories and practical work in fumigation, spraying, inspecting, rearing and insectary methods. Practical course intended to anticipate, so far as possible, the requirements and difficulties which the student will encounter in state or federal entomological work.

Entomology 151 is not prerequisite to 152.

149. Medical Entomology. Three to five credit hours. First semester. Prerequisites, Zoology 101-102 and 121-122, or Entomology 107-108, or equivalents. Mr. Metcalf.

Lectures, demonstrations and recitations upon the insects, mites, and ticks concerned in production and transmission of diseases of man or domestic animals, parasitism, relation to pathogenic bacteria and protozoa, sanitation and health.

The student is advised if possible to precede this course with Zoology 158.

162. Morphology and Development of Insects. Four credit hours. Second semester. Prerequisites, Zoology 101-102 and Entomology 107-108 and 113-114 or equivalent.

An advanced course taking up in a comprehensive way the morphology, embryology, histology and histogenesis of insects. May be taken concurrently with Entomology 114.

FOR GRADUATES

201-202. Seminary in Entomology.

241-242. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

TIME SCHEDULE**COLLEGE OF AGRICULTURE**

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

Key to Abbreviations

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Hall
- Ha.—Hayes Hall
- H. E.—Home Economics Building
- H. F.—Horticulture and Forestry Building
- L.—Library
- Lo.—Lord Hall
- M. L.—Machinery Laboratory
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- S.—Shop Building
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY AND SOILS

AGRICULTURAL CHEMISTRY

Course No.	Hours	Time	Room	Instructor
103—	5	L., M., W., at 8 M., W., at 1 Q., F., at 8 F., at 1 Lab., Tu., Th., 8 to 11 M., W., 1 to 4	T. 205 T. 205 T. 205, 204, 200 T. 205, 204, 200 T. 210 T. 210	Phillips
107—108	3 to 5	To be arranged		
111—112	2 to 4	Tu., Th., at 11 Lab., Tu., Th., 1 to 4	T. 205	Lyman
—113	2	F., at 3; F., 9 to 12	T. 204	Phillips
—114	2	M., W., at 9		Phillips
115—	3	L., M., at 11 Lab., M., W., 8 to 11 Tu., Th., 8 to 11 M., W., 1 to 4 Tu., Th., 1 to 4	T. 205	Phillips
—116	2	To be arranged		Phillips
121—122	3 to 5	L., Th., at 11 Lab., M., W., 1 to 4	T.	Lyman
—123	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 Tu., Th., 1 to 4	T. 205 T. 205 T. 205 T. 210 T. 210	Lyman, Froning
124—	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 Tu., Th., 1 to 4	T. 205 T. 205 T. 205 T. 210 T. 210	Lyman, Froning
125—126	4	L., Tu., Th., at 10 Lab., Tu., Th., 1 to 4	T. 204	Lyman
201—202	5 to 10	To be arranged	T.	Lyman

For Short Courses Only

51—52	4	L., M., W., F., at 9 M., W., F., at 2 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 Th., 1 to 3	T. 205 T. 205	
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AGRICULTURAL CHEMISTRY AND SOILS—Continued

SOILS

Course No.	Hours	Time	Room	Instructor
—152	5	L., M., W., at 8	T. 205	Vivian, Bear
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205, 204, 200	
		F., at 1	T. 205, 204, 200	
		Lab., Tu., Th., 8 to 11	T. 210	
		M., W., 1 to 4	T. 210	
153—154	2	Tu., Th., at 9	T. 204	Bear
155—156	3	L., Tu., at 10	T. 205	Bear, McClure
		Lab., to be arranged	T.	
157—158	3	M., W., 10; Th., 1 to 4	T. 205	Bear, Conrey
159—160	1	To be arranged		Bear
161—162	1 to 4	To be arranged		Bear, McClure
201—202	3 to 10	To be arranged	T.	Bear
203—204	1	To be arranged		Bear

For Short Courses Only

53—54	3	M., W., F., at 3	T. 205
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AGRICULTURAL EDUCATION

101—101	3	M., Tu., W., at 9	T. 106	Stewart
103—104	2	To be arranged		Johnson

AGRICULTURAL ENGINEERING

101—	4	M., W., F., at 3	M. L.	Ramsower,
		Lab., Tu., 8 to 11		Potter
		W., 8 to 11		
		Th., 8 to 11		
—101	4	M., Th., F., at 11	M. L.	Ramsower,
		Lab., Tu., 1 to 4		Potter
		W., 1 to 4		
		Th., 1 to 4		
103—	3	Tu., Th., 1 to 4	M. L.	Ives
—106	3	Tu., Th., 1 to 4	M. L.	All Instructors
—107	4	Tu., Th., at 8	M. L.	McCuen
		Lab., W., F., 1 to 4		
		Tu., Th., 1 to 4		
—108	3	Tu., Th., at 8; M., 1 to 4	M. L.	Ives
110—	3	F., 1 to 4; S., 8 to 11	M. L.	McCuen
111—112	2 to 5	To be arranged		
—114	2	W., F., 1 to 4	M. L.	Ives

AGRICULTURAL ENGINEERING—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
51—	4	Tu., Th., at 9 Lab., F., 1 to 4 M., 1 to 4	M. L.	Ives
—51	4	Tu., Th., at 3 Lab., W., 8 to 11 F., 8 to 11	M. L.	Ives
52—	4	M., W., F., at 10 Lab., F., 8 to 10	M. L.	Ramsower, Potter
—52	4	M., Th., F., at 10 Lab., M., 8 to 10		
53—	3	M., F., at 10 M., 1 to 4 S., 8 to 11	M. L.	Ives
—54	4	M., W., F., at 10 Lab., M., 1 to 4 S., 8 to 11	M. L.	McCuen

AGRICULTURAL EXTENSION

—102	2	To be arranged		Wheeler
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AMERICAN HISTORY

101—102	3	M., W., F., at 8	U. 205	All Instructors
		M., W., F., at 8	L. 107	
		M., W., F., at 9	U. 205	
		M., W., F., at 9	L. 107	
		M., W., F., at 10	U. 205	
		M., W., F., at 10	L. 107	
		M., W., F., at 1	U. 209	
		M., W., F., at 1	L. 107	
		M., W., F., at 2	U. 205	
		M., W., F., at 2	L. 107	
		M., W., F., at 3	U. 205	
		M., W., F., at 3	U. 209	
		M., W., F., at 8	U. 209	
		M., W., F., at 1	U. 205	
102—101	3	M., W., F., at 8	U. 209	Wittke
	3	M., W., F., at 1	U. 205	Wood
—101	3	M., W., F., at 2	U. 209	

ANATOMY

101—102	3 or 5	L., M., at 1 Lab., M., Tu., W., 1 to 4	Bio. 102	Baker
103—104	3 to 5	L., W., at 1 Lab., W., Th., F., 1 to 4	Bio. 107	Landacre
105—106	3 to 5	To be arranged	Bio. 102	Baker

ANATOMY—Continued

Course No.	Hours	Time	Room	Instructor
—116	3	To be arranged		Landacre
—118	3 to 5	L., Tu., at 8	Bio. 100	Landacre
	(pre-med)	Th., at 1	Bio. 102	Baker
		Lab., Tu., 9 to 11		
		Th., 8 to 11		
		Tu., 1 to 4		
		Th., 2 to 4		
		For 5 hrs. credit F., 1 to 4 additional		

ANIMAL HUSBANDRY

117—118	3	Tu., Th., at 8 Lab., Th., 1 to 3 F., 1 to 3	Pav.	Jacoby
119—	2	M., W., at 9	Pav.	Jacoby
—120	1	To be arranged	Pav.	Jacoby
—121	1	F., at 11	Pav.	Jacoby
—122	1	To be arranged	Pav.	Jacoby
—124	2	M., W., 1 to 3	Pav.	Jacoby
—132	3	Tu., Th., at 8 Lab., Th., 1 to 3		Kays
133—	3	Tu., Th., at 2; F., at 1	Pav.	
135—	4	L., M., W., F., at 2 Lab., Tu., 8 to 10 Th., 8 to 10	Pav.	Coffey
—135	4	L., M., W., F., at 10 Lab., M., 1 to 3 W., 1 to 3	Pav.	Coffey
137—	3	M., W., F., at 9	Pav.	Coffey
—137	3	M., W., F., at 8	Pav.	Conklin
139—	3	L., Tu., Th., at 9 Lab., W., 1 to 3	Pav.	Kays
141—	3	L., Tu., Th., at 11 Lab., Tu., 1 to 3	Pav.	Conklin
—143	3	L., Tu., Th., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	Pav.	Coffey
—145	3	L., M., W., at 8 Lab., Th., 1 to 3	Pav.	Plumb
—147	3	L., Tu., Th., at 11 Lab., W., 1 to 3	Pav.	
149—	4	L., M., W., F., at 10 Lab., W., 1 to 3	Pav.	Plumb
151—	3	Th., 1 to 4 F., 1 to 4	Pav.	Kays

ANIMAL HUSBANDRY—Continued

Course No.	Hours	Time	Room	Instructor
—153	3	L., Tu., Th., at 8 Lab., Tu., 1 to 3	Pav.	Conklin
155—	3	M., Th., F., at 11	Pav.	Plumb
—157	4	L., M., W., F., at 10 Lab., M., 1 to 3 W., 1 to 3	Pav.	Kays
—159	3	L., M., Th., F., at 11	Pav.	Plumb
—161	2	F., 1 to 4	Pav.	Kays
163—164	2 to 5	To be arranged		
201—202		To be arranged	Pav.	Plumb

For Short Courses Only

51—52	4	M., W., F., at 8 M., W., F., at 3 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 F., 1 to 3	Pav. Pav.	Coffey
53—	4	M., W., F., at 10 Lab., M., 1 to 3	Pav.	Conklin
54—54	4	M., Tu., Th., F., at 11	Pav.	
—56	4	M., W., F., at 9 Lab., Th., 1 to 3	Pav.	Kays
57—	4	M., W., F., at 9 Lab., Th., 1 to 3	Pav.	Coffey
59—60	3	Tu., Th., at 10 Lab., Tu., 1 to 3 Th., 1 to 3 F., 1 to 3	Pav.	Jacoby

ARCHITECTURE

111—	2	W., Th., 1 to 4 F., S., 8 to 11	Br. 1 Br. 1	Haskett Haskett
—111	2	M., Tu., 1 to 4 Th., F., 1 to 4	Br. 1 Br. 1	Haskett Haskett
113—	2	Tu., Th., at 3	Br. 104	Chubb
131—132	2	M., W., 8 to 11 W., F., 1 to 4	Br. Br.	Ronan
133—	3	M., W., F., at 2	Br. 104	Chubb
—136	3	M., W., F., at 3	Br. 104	Chubb

ART

119—119	1	M., at 4 Th., at 11	Ha. 204	Kelley
121—	2	Tu., Th., 9 to 11	Ha. 303	Talbot

ART—Continued

Course No.	Hours	Time	Room	Instructor
—121	2	Tu., Th., 1 to 3	Ha. 303	Talbot
131—	2	M., W., 8 to 10	Ha. 303	Norris
		M., W., 1 to 3	Ha. 303	Talbot
		Tu., Th., 8 to 10	Ha. 303	Christensen,
				Norris
		Tu., Th., 1 to 3	Ha. 303	Robinson,
				Christensen
—131	2	Tu., Th., 8 to 10	Ha. 303	Norris
132—	2	M., W., 1 to 3	Ha. 303	Kelley
—132	2	Tu., Th., 8 to 10	Ha. 303	Christensen
		M., W., 9 to 11	Ha. 303	Norris
133—	2	M., W., 9 to 11	Ha. 303	Norris
		W., F., 9 to 11	Ha. 303	Robinson
—133	2	Tu., Th., 2 to 4	Ha. 303	Robinson
136—	2	Tu., Th., 8 to 10	Ha. 303	Robinson
—136	2	M., W., 9 to 11	Ha. 303	Robinson
		Tu., Th., 9 to 11	Ha. 303	Robinson
141—	2	Tu., Th., at 10	Ha. 204	Christensen
—141	2	Tu., Th., at 8	Ha. 204	Robinson
		Tu., Th., at 10	Ha. 204	Talbot
		Tu., Th., at 1	Ha. 204	Christensen
		Tu., Th., at 3	Ha. 204	Christensen
142—	3	M., W., 8 to 10	Ha. 303	Talbot
—142	3	M., W., 8 to 10	Ha. 303	Talbot

BACTERIOLOGY

107—	4 or 5	L., M., W., at 9	V. L. 101	Morrey
		M., W., at 2	V. L. 102	Morrey
		Tu., Th., at 9	V. L. 102	Morrey
		Lab., Tu., Th., 8 to 11	V. L. 8	Masters
			201	Ockerblad
			205	Morrey
		Tu., Th., 1 to 4	V. L. 8	Masters
		M., W., 8 to 11	V. L. 8	Masters
			201	Ockerblad
		M., W., 1 to 4	V. L. 8	Masters
—108	2 to 5	L., M., W., at 9	V. L. 102	Morrey
		M., W., at 2	V. L. 102	Morrey
		Lab., M., W., F., 8 to 11	V. L. 201	Masters,
				Ockerblad
		M., W., F., 1 to 4	V. L. 201	Masters,
				Ockerblad
—110	2 to 5	L., Tu., Th., at 9	V. L. 102	Morrey
		Lab., to be arranged		Masters
				Morrey

BACTERIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
—112	2 to 5	L., Tu., Th., at 10 Lab., to be arranged	V. L. 102	Morrey Morrey, Masters
121—122	3 to 5	To be arranged		Morrey
123—124	3 to 5	To be arranged		Morrey

For Short Courses Only

51—	3	M., W., at 4	V. L. 102	Morrey
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BIBLIOGRAPHY

103—	½	Th., at 3 M., at 11	Li. 107 Li. 107	Reeder Reeder
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BOTANY

101—102	3	L., Tu., Th., at 8 Tu., Th., at 9 Tu., Th., at 10 Tu., Th., at 1 Tu., Th., at 2 Tu., Th., at 3 Lab., M., 1 to 3 W., 8 to 10 W., 1 to 3 Th., 8 to 10 Th., 1 to 3 F., 8 to 10 F., 1 to 3	B. Z. 208, 110 B. Z. 208, 110 B. Z. 208, 110 B. Z. 110, 208 B. Z. 110, 208 B. Z. 110, 208 B. Z. 108 B. Z. 108 B. Z. 108 B. Z. 108 B. Z. 108 B. Z. 108 B. Z. 108	All Instructors
—101	3	L., M., W., at 2 Lab., M., 8 to 10		
107—108	2	To be arranged	B. Z. 108	Detmers
110—	2	W., 1 to 4	B. Z. 108	Griggs
—116	3	L., M., W., at 10 Lab., F., 10 to 12	B. Z. 208 B. Z. 206	Stover
117—118	3	L., M., at 10 Lab., W., 1 to 5	B. Z. 110 B. Z. 66	Transeau
—120	3	S., and M. arranged	B. Z. 210	Griggs
121—	3	L., W., at 1 Lab., W., 2 to 4	B. Z. 110 B. Z. 62	Schaffner
123—124	4	L., M., W., at 10 Lab., to be arranged	B. Z. 109 B. Z.	Griggs
125—126	4	L., M., W., at 9 Lab., Tu., Th., 1 to 3 Tu., Th., 3 to 5	B. Z. 110 B. Z. 112 B. Z. 112	Transeau
127—128	4	L., Tu., Th., at 11 Lab., M., F., 10 to 12	B. Z. 110 B. Z. 210	Stover

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
129—130	3 to 5	M., 1 to 4; other hours arranged	B. Z. 60	Schaffner
133—134	3 to 5	To be arranged		All Instructors
135—136	1	Tu., at 4	B. Z. 110	Schaffner
139—140	3	To be arranged	B. Z. 210	Stover
—142	2	Th., 1 to 4	B. Z. 62	Schaffner
—150	3	Tu., at 9; W., 9 to 11	B. Z. 110, 112	Transeau
151—	3	To be arranged	B. Z.	Sampson
201—202	3 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
203—204	4 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
205—206	4 to 10	To be arranged	B. Z. 112	Transeau
207—208	3 to 10	To be arranged	B. Z. 210	Griggs, Stover
209—210	1	To be arranged	B. Z.	Schaffner

For Short Courses Only

91—	4	To be arranged	B. Z.
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CHEMISTRY

105—106	4	L., M., at 8	Ch. 200	Evans and department assistants
		W., at 9	Ch. 200	
		M., at 1	Ch. 200	
		W., at 2	Ch. 200	
		Q., W., at 8	Ch. 101, 302	
		F., at 8	Ch. 302	
		F., at 9	Ch. 101, 302	
		F., at 11	Ch. 302	
		W., at 1	Ch. 101, 302	
		F., at 1	Ch. 101, 302	
		F., at 2	Ch. 101, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
106—105	4	L., W., at 8	Ch. 200	
		W., at 1	Ch. 200	
		Q., M., at 8	Ch. 101	
		M., at 1	Ch. 101	
		Lab., F., S., 8 to 11		
109—110	4	Tu., Th., 1 to 4		Evans and department assistants
		L., F., at 10	Ch. 200	
		F., at 3	Ch. 200	
		Q., M., at 10	Ch. 207	

CHEMISTRY—Continued

Course No.	Hours	Time	Room	Instructor
		M., at 3	Ch. 101, 302	
		W., at 10	Ch. 101, 207	
		W., at 3	Ch. 101, 302	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
110—109	4	L., M., at 9	Ch. 200	
		M., at 2	Ch. 200	
		Q., F., at 10	Ch. 302	
		F., at 2	Ch. 207	
		Lab., F., S., 8 to 11		
		M., W., 1 to 4		
127—	4	M., Tu., Th., F., at 11	Ch. 200	Boord
151—152	2	Tu., Th., at 8	Ch. 200	McPherson
153—154	2 or 3	Lab. open afternoons		McPherson, Boord

CIVIL ENGINEERING

131—	5	M., W., F., at 10	Br. 1	Neilson
		M., Tu., 1 to 4		
133—	1	Tu., at 11	Br. 1	Eno

DAIRYING

101—	4	M., W., F., at 10	T. 200	Stoltz
		Lab., Tu., 1 to 4	T. 3, 5, 10	
		F., 1 to 4	T. 3, 5, 10	
—101	4	M., W., F., at 2	T. 200	Stoltz
		Lab., Tu., 8 to 11	T. 3, 5, 10	
		F., 8 to 11	T. 3, 5, 10	
—102	4	M., W., F., at 10	T. 200	Erf, Stoltz
		Lab., Th., 1 to 4	T. 3, 5, 10	
—103	2 to 4	M., at 4	T. 200	
		Lab., to be arranged		
—104	2	To be arranged		
105—105	4	L., Tu., Th., at 10		
		Lab., M., or Th., 2 to 5 and		
		Tu., or F., 8 to 10		
107—107	3	Tu., Th., at 11	T. 200	Stoltz
		Lab., M., 1 to 5	T. 3, 5, 10	
		W., 1 to 5		
—110	2	F., at 11; S., 8 to 12	T. 200	
113—114	2	To be arranged		Erf

DAIRYING—Continued

Course No.	Hours	Time	Room	Instructor
115—	2	Tu., Th., at 11	T. 106	Erf
—116	2	M., at 11	T. 124	Erf
		Lab., to be arranged		
119—120	1	To be arranged		
121—121	9	To be arranged		Erf
201—202	5 to 10	To be arranged		Erf

For Short Courses Only

52—	3	Tu., Th., at 3	T. 200	Stoltz
		Lab., W., 8 to 11		
		F., 8 to 11		
—52	3	Tu., Th., at 9	T. 200	Stoltz
		Lab., M., 1 to 4		
		W., 1 to 4		
53—53	3	Tu., Th., at 3	T. 106	Erf, Stoltz
		Lab., W., 8 to 11		
		Th., 8 to 11		
55—	3	To be arranged		Stoltz
—56	3	To be arranged		
57—58	3	To be arranged		Erf

ECONOMICS AND SOCIOLOGY

ECONOMICS

101—102	3	M., W., F., at 8	P. 12	All Instructors
		M., W., F., at 8	P. 13	
		M., W., F., at 8	P. 7	
		M., W., F., at 9	P. 12	
		M., W., F., at 9	P. 13	
		M., W., F., at 9	P. 9	
		M., W., F., at 10	P. 12	
		M., W., F., at 10	P. 13	
		M., W., F., at 10	P. 109	
		M., Th., F., at 11	P. 12	
		M., Th., F., at 11	P. 109	
		M., Th., F., at 11		
		M., W., F., at 1	P. 12	
		M., W., F., at 1	P. 13	
		M., W., F., at 2		
		M., W., F., at 2	P. 109	
		M., W., F., at 3	P. 12	
		M., W., F., at 3	P. 13	
—101	3	M., W., F., at 8	P. 109	
		M., W., F., at 3	P. 9	
102—	3	M., W., F., at 8	P. 109	
		M., W., F., at 9	P. 109	
		M., W., F., at 2	P. 6	

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
139—140	3	M., W., F., at 3	P. 109	Eckelberry
		L., Tu., Th., at 8	P. 7	
		Tu., Th., at 9	P. 9	
		Tu., Th., at 9	P. 7	
		Tu., Th., at 10	P. 13	
		Tu., Th., at 11	P. 6	
		Tu., Th., at 1	P. 6	
		Tu., Th., at 2	P. 6	
		Tu., Th., at 3	P. 6	
		Lab., M., 8 to 10	P. 11	
		M., 1 to 3	P. 11	
		M., 3 to 5	P. 11	
		Tu., 10 to 12	P. 11	
		Tu., 1 to 3	P. 11	
		W., 8 to 10	P. 11	
		Th., 10 to 12	P. 11	
		F., 8 to 10	P. 11	
140—139	3	L., Tu., Th., at 10	P. 109	
		Tu., Th., at 11		
		Tu., Th., at 3	P. 109	
		Lab., Tu., 8 to 10	P. 11	
		W., 1 to 3	P. 11	
147—148	2	W., 3 to 5	P. 11	Walradt
		Tu., Th., at 1	P. 13	

SOCIOLOGY

101—102	3	M., W., F., at 8		
		M., W., F., at 8		
		M., W., F., at 9	L. 307	
		M., W., F., at 9		
		M., W., F., at 10		
		M., Tu., F., at 11	P. 7	
		M., Tu., F., at 11		
		M., W., F., at 1	P. 7	
		M., W., F., at 2		
		M., W., F., at 3		
102—101	3	M., W., F., at 10		
		M., W., F., at 2		
107—	3	M., W., F., at 2		McKenzie
—112	4	M., W., F., at 8	P. 9	Hagerty
		Lab., S., 9 to 12		

ENGINEERING DRAWING

101—	2	M., W., 8 to 10	Br. 203	All Instructors
		M., W., 1 to 3	Br. 203, 200	
		Tu., Th., 8 to 10	H. F.	

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., 1 to 3	Br. 203, 200	
		F., S., 8 to 10	Br. 104, H. F.	
—101	2	F., S., 8 to 10		
102—	3	M., at 8	Br. 200	
		M., 9 to 11; Tu., 8 to 10		
—102	3	L., M., at 2	Br. 203, 1	All Instructors
		M., at 9	Br. 203	
		W., at 10	Br. 203, 200	
		W., at 3	Br. 203	
		F., at 8	Br. 203, 200	
		F., at 10	Br. 200, 104	
		F., at 1	Br. 203, 200	
		F., at 2	Br. 200, 1	
		F., at 3	Br. 203	
		Lab., M., W., 8 to 10	Br.	
		M., W., 1 to 3	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		F., S., 8 to 10	Br.	
108—	3	Tu., Th., at 8; Th., 1 to 4	Br. 200	French
125—125	2	L., Tu., at 1	Br. 104	French
		Th., at 9	Br. 104	Meiklejohn
		Th., at 1	Br. 104	Withrow
		F., at 10	Br. 203	
		Lab., W., 8 to 11	Br.	
		W., 1 to 4	Br.	
		F., 8 to 11	Br.	
		F., 1 to 4	Br.	
127—	1½	S., 8 to 11	Br. 203	French, Turnbull
—128	1½	S., 8 to 11	Br. 203	French

ENGLISH

101—104	2	M., W., at 9	Ph. 5	All Instructors
		M., W., at 3	Ph. 104	
		Tu., Th., at 8	Ph. 202, 104, 204	
		Tu., Th., at 9	Ph. 202, 104, 102	
		Tu., Th., at 10	U. 312, P. 7, 12	
		Tu., Th., at 11	Ph. 202	
		Tu., Th., at 1	Ph. 202, 104, 204	
		Tu., Th., at 2	Ph. 102, 104, P. 9, P. 13	
		Tu., Th., at 3	Ph. 202, 104, 302, 204	
		Tu., Th., at 4	Ph. 104	
104—101	2	Tu., Th., at 8	Ph. 102	

ENGLISH—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 4	Ph. 102	
105—106	2	Tu., Th., at 10	Ph. 104	Beck
		M., W., at 2	Ph. 303	Dishong
133—133	3	M., W., F., at 10	Ph. 104	Taylor
		M., W., F., at 3	Ph. 302	Graves
141—	3	M., W., F., at 9	Ph. 102	Taylor
		M., W., F., at 10	Ph. 304	Cooper
		M., W., F., at 1	Ph. 102	Cooper
		M., W., F., at 3	Ph. 303	Percival
145—146	3	M., W., F., at 8	Ph. 204	Percival
		M., W., F., at 10	Ph. 204	Beck
		M., W., F., at 1	Ph. 204	McKnight
		M., W., F., at 2	Ph. 302	Graves

For Short Courses Only

91—92	2	Tu., Th., at 8	Ph. 5	Dishong
		Tu., Th., at 10	Ph. 5	Dishong
		Tu., Th., at 2	Ph. 5	Dishong
		Tu., Th., at 3	Ph. 5	Dishong

PUBLIC SPEAKING (See Public Speaking)

EUROPEAN HISTORY

101—102	3	M., W., F., at 8	U. 201	All Instructors
		M., W., F., at 8	U. 202	
		M., W., F., at 9	U. 201	
		M., W., F., at 10	U. 201	
		M., W., F., at 1	U. 201	
		M., W., F., at 1	U. 202	
		M., W., F., at 2	U. 201	
		M., W., F., at 3	U. 201	
		M., W., F., at 4	U. 201	
102—101	3	M., W., F., at 8	U. 316	
		M., W., F., at 1	H. F. 106	

FARM CROPS

101—	4	M., Th., F., at 11	H. F. 108	
		Lab., Th., 1 to 3	H. F.	
		F., 1 to 3	H. F.	
—101	4	M., W., F., at 3	H. F. 108	
		Lab., Th., 8 to 10	H. F.	
		F., 8 to 10	H. F.	

FARM CROPS—Continued

Course No.	Hours	Time	Room	Instructor
109—	3	Tu., Th., at 10; M., 1 to 3	H. F. 112	
—111	3	Tu., Th., at 10 M., 1 to 3	H. F. 112 H. F.	Willard
—112	2	To be arranged	H. F.	
113—	3	Tu., Th., at 10; W., 1 to 4	H. F.	Park
119—120	2 to 4	To be arranged	H. F.	Park
123—	2	To be arranged		Willard
201—202	5 to 10	To be arranged		Park
203—204	1	To be arranged		Park

For Short Courses Only

51—52	4	M., W., F., at 2 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 F., 8 to 10	H. F. 108
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FORESTRY (See Horticulture Courses 180-184)

GEOLOGY

103—	3	M., W., F., at 10	O. 105	Bownocker
—104	3	M., W., F., at 10	O. 105	Carman
105—	3 to 5	To be arranged; field trips Saturday		Carman
—106	3	To be arranged; field trips Saturday		Hills
151—151	Agr. 3	L., Tu., Th., at 8	O. 105 2nd sem. 1	Bevan
		Tu., Th., at 9	O. 105	
		Tu., Th., at 10	O. 1, 2nd sem. 105	
		Tu., Th., at 1	O. 105, 2nd sem. 1	
		Tu., Th., at 2	O. 105	
		Tu., Th., at 3	O. 105	Cottingham
		Lab., W., 8 to 10	O.	
		W., 1 to 3	O.	
		F., 8 to 10	O.	
		F., 10 to 12	O.	Cottingham
		F., 1 to 3	O.	
—162	4	M., W., F., at 9	O. 105	
167—	3	M., W., F., at 8	O. 105	Bownocker

GERMAN

Course No.	Hours	Time	Room	Instructor
101—102	4	M., Tu., W., Th., at 9	U. 320	Evans
		M., Tu., W., Th., at 10	U. 320	Eisenlohr
		M., Tu., W., Th., at 1	U. 320	Kotz
		M., Tu., W., Th., at 2	H. F. 113	Thomas
—101	4	M., Tu., W., Th., at 3	H. F. 107	Kotz
102—103	4	M., Tu., W., Th., at 3	U. 320	Barrows
103—104	4	M., Tu., W., Th., at 3	U. 319	Thomas
103—106	4	M., Tu., W., Th., at 8	U. 319	Eisenlohr
		M., Tu., W., Th., at 10	H. F. 107	Evans
		M., Tu., W., Th., at 1	U. 319	
106—	4	M., Tu., W., Th., at 3	H. F. 107	Kotz

HISTORY AND PHILOSOPHY OF EDUCATION

101—102	3	M., W., F., at 10	Ha. 101	Anderson
		M., W., F., at 4	Ha. 101	Anderson
102—		M., Th., F., at 11	Ha. 101	
—101		M., Th., F., at 11	Ha. 101	

HOME ECONOMICS

101—102	5	L., M., W., at 9	H. E. 203	White
		M., W., at 2	H. E. 102	White
		Q., Th., at 10	H. E. 102	White and
		F., at 8	H. E. 102	department
		F., at 10	H. E. 321	assistants
		F., at 1	H. E. 102	
		Lab., (101-102) M., W.,	H. E.	
		1 to 3		
		(101-102) Tu., Th.,		
		8 to 10		
		1st sem. (101)		
		M., W., 9 to 11		
		2nd sem. (102)		
		Tu., F., 10 to 12		
		1st sem. (101)		
		Tu., Th., 1 to 3		
		2nd sem. (102)		
		Tu., Th., 3 to 5		
104—	3	M., W., F., at 4	H. E. 203	Linder
—104	3	M., W., F., at 4	H. E. 203	Linder
105—106	2 to 5	W., at 10	H. E. 218	Van Meter
		Lab., to be arranged	H. E. 301, 302	
—108	2	Tu., Th., at 9	H. E. 102	Van Meter,
				Hathaway,
				Adams

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
110—	4	Tu., Th., at 8	H. E. 203	Skinner
		Lab., M., W., 1 to 3	H. E. 204	
—110	4	Tu., Th., at 9	H. E. 203	Skinner
		Lab., Tu., Th., 10 to 12	H. E. 204	
		M., W., at 1	H. E. 203	Skinner
		Lab., M., W., 2 to 4	H. E. 204	
111—112	2	L., M., at 9	H. E. 321	Walker
		M., at 2	H. E. 218, 321	Tucker
		Tu., at 8	H. E. 218	Walker
		Tu., at 2	H. E. 218	Walker
		Th., at 9	H. E. 218, 321	Walker
		Th., at 1	H. E. 218	Walker
		Lab., Tu., 8 to 11	H. E. 215, 216,	
		W., 8 to 11	217	
		W., 1 to 4		
		Th., 1 to 4		
		F., 8 to 11		
		F., 1 to 4		
113—	3	L., Th., at 10	H. E. 203	Hathaway
		Lab., Tu., F., 10 to 12	H. E. 113, 114	
		Tu., Th., 1 to 3		
		M., W., 1 to 3		
—113	3	L., Th., at 11	H. E. 102	Hathaway
		Tu., F., 10 to 12	H. E. 113, 114	
—116	3	L., Th., at 10	H. E. 203	Hathaway
		M., W., 1 to 3	H. E. 113	
		M., W., 8 to 10	H. E. 113, 114	
118—118	3	F., at 11; Tu., Th., 10 to 12	H. E. 218, 211	Tucker
		F., at 3; Tu., Th., 2 to 4	H. E. 218	Tucker
119—	3	M., W., at 3; F., 2 to 4	H. E. 218	Walker
—119	3	M., W., at 9; F., 10 to 12	H. E. 218	Walker
		M., W., at 3; F., 2 to 4	H. E. 218	Walker
121—	3	M., at 10	H. E. 218	Skinner
		Lab., Tu., Th., 8 to 10	H. E. 302	
		M., W., 2 to 4	H. E. 302	
123—124	2	Tu., at 11; Lab., to be arranged	H. E. 203	Adams
125—126	3	To be arranged		White
201—202	2 to 5	To be arranged		White

HORTICULTURE

101—	4	M., W., F., at 10	H. F. 113	
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
103—104	4	M., W., F., at 8	H. F. 113	Montgomery
		Lab., Tu., 2 to 5		

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
105—108	4	M., W., F., at 9 Lab., M., 1 to 3	H. F. 112	Paddock
107—	3	M., W., F., at 10	H. F. 112	Hottes
109—110	3	Tu., at 11 Lab., to be arranged	H. F. 113	Paddock
118—118	4	L., M., W., F., at 9 Lab., F., 2 to 4	H. F. 113	Montgomery
		M., W., F., at 2 Lab., Th., 8 to 10	H. F. 112	
—120	4	M., W., F., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	H. F. 113	
121—122	4	M., Th., F., at 11 Lab., W., 2 to 4	H. F. 113	
131—132	4	M., W., F., at 10 Lab., F., 2 to 5	H. F.	Montgomery
133—	3	Tu., at 9; W., 1 to 5	H. F. 113	Montgomery
141—142	4	M., W., F., at 8 Th., 1 to 4	H. F.	Hottes
—143	3	Tu., Th., at 8 Lab., Tu., 1 to 3	H. F.	Hottes
—144	3	Tu., Th., at 9; M., 1 to 3	H. F.	Hottes
145—	3	Tu., Th., at 9; F., 1 to 3	H. F.	Hottes
—146	3	M., W., at 10 F., 1 to 3	H. F.	Hottes
147—148	3	To be arranged	H. F.	Hottes
—150	3	F., at 11 Lab., M., Tu., 1 to 4		
151—152	2	Tu., at 10 S., 9 to 12	H. F.	
—154	3	M., W., F., at 10	H. F.	
—156	2	M., W., at 8	H. F. 107	
157—158	3	M., at 11 Tu., Th., 1 to 3	H. F.	
159—160	4	To be arranged	H. F.	
—162	4	Th., at 11 Lab., to be arranged	H. F.	
164—	3	Tu., at 11 M., W., 1 to 4	H. F.	
—165	3	Th., at 10 Lab., to be arranged	H. F.	
—166	3	Tu., at 11; M., W., 1 to 4	H. F.	
—168	4	To be arranged		
169—170	3	To be arranged	H. F.	
—172	1	To be arranged	H. F.	
180—180	4	L., M., W., F., at 9 Lab., W., 1 to 4	H. F.	Scherer

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
181—182	3	L., Tu., Th., at 9 Lab., F., 1 to 4	H. F.	Scherer
183—	3	L., Tu., Th., at 10 Lab., M., 1 to 4	H. F.	Scherer
—184	3	L., M., W., F., at 8	H. F. 112	Scherer
201—202	5 to 10	To be arranged	H. F.	Paddock

For Short Courses Only

51—52	4	M., W., F., at 3 Lab., Tu., 8 to 10	H. F. 113	
53—54	4	M., W., F., at 1 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 F., 8 to 10	H. F. 113	
55—56	4	M., W., F., at 1 Lab., Th., 8 to 10	H. F. 112	Montgomery
57—58	4	M., W., F., at 11 Lab., Th., 1 to 3	H. F.	Paddock
59—	4	M., W., F., at 10 Lab., W., 1 to 3	H. F.	Paddock
—60	4	M., Tu., Th., F., at 9	H. F.	
—62	4	M., W., F., at 9 Lab., Th., 1 to 3	H. F.	Montgomery
—64	4	M., W., F., at 10 Lab., Tu., 1 to 3	H. F.	Montgomery
65—66	4	M., W., F., at 9 Lab., W., 2 to 4	H. F.	Hottes
67—	4	M., W., F., at 10 Lab., Th., 1 to 3	H. F.	Scherer

JOURNALISM

101—102	3	Agr., Tu., at 11 Lab., to be arranged	S. 208	Baker
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MATHEMATICS

107—107	3	M., W., F., at 8 M., W., F. at 9 M., W., F., at 10 M., W., F., at 1 M., W., F., at 2 M., W., F., at 3	U. 310 U. 310 U. 312 U. 310 U. 310 U. 312	Rickard Rasor Bohannon Bareis Rasor Arnold
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METEOROLOGY

Course No.	Hours	Time	Room	Instructor
—101	2	Tu., Th., at 10	O. 1	Bownocker

MILITARY SCIENCE AND TACTICS

1—1	1	M., Tu., Th., F., at 11 Tu., W., Th., at 4; Th., at 11	Ha.	Leonard Halstead
2—2	1	M., Tu., F., at 11 Tu., W., Th., at 4	Ha.	Leonard Halstead

PHYSICAL EDUCATION

FOR MEN

101—102	1	Tu., Th., at 10 M., W., at 10 M., F., at 10 W., F., at 10 Tu., Th., at 11 Tu., Th., at 2 M., W., at 2 M., F., at 2 W., F., at 2 Tu., Th., at 3 M., W., at 3 M., F., at 3 W., F., at 3 Tu., Th., at 4 M., W., at 4 M., F., at 4 W., F., at 4		Nichols and all instructors
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(Hours to be arranged for corrective work)

FOR WOMEN

131—132	1	Tu., at 11; 3 hours to be arranged		Meyer, Hammett
133—134	1	4 hours to be arranged		Meyer, Hammett

PHYSICS

103—104	4	M., W., F., at 8 M., W., F., at 3 Lab., W., 9 to 11 W., 1 to 3	Ph. 205 Ph. 205 Ph.	Earhart Earhart
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PHYSICS—Continued

Course No.	Hours	Time	Room	Instructor
105—106	4	M., W., F., at 10	Ph. 205	Earhart, Blake
		M., W., F., at 3	Ph. 200	Earhart, Blake
		Lab., Tu., 8 to 11		
		Tu., 1 to 4		
		Th., 8 to 11		
		Th., 1 to 4		
109—109	3 Agr.	M., W., F., at 8	Ph. 202	Cole
		M., W., F., at 9	Ph. 202	Cole
		M., W., F., at 10	Ph. 202	Cole
		M., W., F., at 1	Ph. 202	Cole
		M., W., F., at 2	Ph. 202	Cole
		M., W., F., at 3	Ph. 202	Cole

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND
PHARMACOLOGY

101—102	3	M., W., F., at 8	Bio. 200	All Instructors
		M., W., F., at 9	Bio. 200	
		M., W., F., at 10	Bio. 200	
		M., W., F., at 1	Bio. 200	
		M., W., F., at 2	Bio. 200	
		M. W., F., at 3	Bio. 200	
—104	3	Tu., Th., 8 to 11	Bio. 208	Bleile
135—136	4	L., Tu., Th., at 9	Bio. 200	Bleile, Durrant
		Lab., Tu., Th., 1 to 3		

PSYCHOLOGY

101—102	3	M., W., F., at 8	U. 406	All Instructors
		M., W., F., at 8	U. 401	
		M., W., F., at 9	U. 401	
		M., W., F., at 9	U. 410	
		M., W., F., at 9	U. 412	
		M., W., F., at 10	U. 400	
		M., W., F., at 10	U. 401	
		M., W., F., at 10	U. 406	
		M., W., F., at 1	U. 412	
		M., W., F., at 1	U. 406	
		M., W., F., at 2	U. 406	
		M., W., F., at 2	U. 401	
		M., W., F., at 3	U. 406	
		M., W., F., at 4	U. 412	
102—101	3	M., W., F., at 9	U. 400	
		M., W., F., at 3	U. 412	

PUBLIC HEALTH AND SANITATION

SCIENCE NURSING

Course No.	Hours	Time	Room	Instructor
—106	2	To be arranged		
—110	2	To be arranged		
111—	2	To be arranged		
113—	2	To be arranged		
115—	1	To be arranged		
117—	1	To be arranged		
119—	10	To be arranged		
—122	2	To be arranged		
—124	2	To be arranged		
125—	1	To be arranged		
127—	1	To be arranged		
129—	2	To be arranged		
131—	2	To be arranged		
133—	2	To be arranged		
135—	1	To be arranged		
137—	1	To be arranged		
139—	6	To be arranged		

PUBLIC SPEAKING

101—102	2	Tu., Th., at 8	Ph. 304	Ketcham
		Tu., Th., at 8	Ph. 302	Wiley
		Tu., Th., at 10	Ph. 304	Ketcham
		Tu., Th., at 10	Ph. 302	Wiley
		M., W., at 1	Ph. 304	Wiley
		Tu., Th., at 1	Ph. 304	Ketcham
		Tu., Th., at 1	Ph. 302	Wiley
		Tu., Th., at 2	Ph. 302	Wiley
		Tu., Th., at 9	Ph. 302	
101—				

ROMANCE LANGUAGES

FRENCH

101—102	4	M., Tu., W., Th., at 8	U. 303	All Instructors
		M., Tu., W., Th., at 8	H. F. 203	
		M. Tu., W., Th., at 9	H. F. 203	
		M. Tu., W., Th., at 9		
		M., Tu., W., Th., at 10	U. 303	
		M., Tu., W., Th., at 10	U. 302	
		M., Tu., W., Th., at 1	U. 303	
		M., Tu., W., Th., at 1	U. 302	
		M., Tu., W., Th., at 2	Br. 200	
		M., Tu., W., Th., at 2	H. F. 203	
		M., Tu., W., Th., at 3	U. 302	
		M., Tu., W., Th., at 3	H. F. 203	

ROMANCE LANGUAGES—Continued

Course No.	Hours	Time	Room	Instructor
		M., Tu., W., Th., at 4	U. 301	
		M., Tu., W., Th., at 4	U. 308	
—101	4	M., Tu., W., Th., at 3	H. E. 203	
102—103	4	M., Tu., W., Th., at 3	U. 301	
		M., Tu., W., Th., at 10		
103—104	4	M., Tu., W., Th., at 8	U. 302	All Instructors
		M., Tu., W., Th., at 9	U. 302	
		M., Tu., W., Th., at 10	H. F. 108	
		M., Tu., W., Th., at 1	H. F. 203	
		M., Tu., W., Th., at 2	U. 303	
		M., Tu., W., Th., at 3		
		M., Tu., W., Th., at 4	U. 302	
104—	4	M., Tu., W., Th., at 3	H. E. 203	
—106	4	M., Tu., W., Th., at 10	Br. 1	Berthemy

SPANISH

101—102	4	M., Tu., W., Th., at 8	U. 301	All Instructors
		M., Tu., W., Th., at 8	Ph. 303	
		M., Tu., W., Th., at 9	U. 303	
		M., Tu., W., Th., at 9	Ph. 303	
		M., Tu., W., Th., at 10		
		M., Tu., W., Th., at 10		
		M., Tu., W., Th., at 1	U. 301	
		M., Tu., W., Th., at 1		
		M., Tu., W., Th., at 2	U. 301	
		M., Tu., W., Th., at 2		
		M., Tu., W., Th., at 3	U. 303	
		M., Tu., W., Th., at 4	U. 303	
—101	4	M., Tu., W., Th., at 1		
102—103	4	M., Tu., W., Th., at 9		
		M., Tu., W., Th., at 2		
103—104	4	M., Tu., W., Th., at 10	U. 301	Chapin
		M., Tu., W., Th., at 4	Ph. 303	Gutierrez
		M., Tu., W., Th., at 1		

RURAL ECONOMICS

101—101	2	Tu., at 10; W., 1 to 4		Phillips
		M., at 11; W., 8 to 11		
102—	2	Tu., at 11; Th., 8 to 11		Falconer
103—	4	M., W., F., at 8		Falconer
		M., W., F., at 1		Falconer
		Lab., Th., 1 to 5		
		S., 8 to 12		
104—104	3	M., W., F., at 8		
		M., W., F., at 1		
105—	2	M., W., at 9		Falconer

RURAL ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
—110	3	M., W., F., at 9		Lantis
—111	1	Tu., at 11		Falconer
113—	3	M., W., F., at 9		Erdman
—114	2	To be arranged		Falconer
—116	2	Tu., Th., at 9		Erdman
—118	2	To be arranged		Lantis
201—202	3 to 10	M., at 4		

For Short Courses Only

51—51	4	Tu., Th., at 1 Lab., M., Tu., 8 to 10 Th., F., 8 to 10		Phillips
52—52	4	Tu., Th., at 11 Lab., to be arranged		
53—	4	To be arranged		
—54	4	To be arranged		

SHOPWORK

101—101	2	Tu., at 8; Tu., 1 to 4 Tu., at 10; F., 1 to 4 Tu., at 1; Tu., 8 to 11 Tu., at 1; F., 8 to 11 Tu., at 10; M., 1 to 4 Th., at 1; Th., 8 to 11 Th., at 3; M., 8 to 11 F., at 9; Th., 1 to 4	S. S. S. S. S. S. S. S.	Denman Senn
103—103	2	Tu., at 8; Tu., 1 to 4 Tu., at 10; F., 1 to 4 Tu., at 10; M., 1 to 4 Tu., at 1; Tu., 8 to 11 Tu., at 1; F., 8 to 11 Tu., at 3; M., 8 to 11 Th., at 2; Th., 8 to 11 F., at 9; Th., 1 to 4	S. S. S. S. S. S. S. S.	Foust, Wright

For Short Courses Only

51—51	2	M., at 1; W., 8 to 11 F., at 11; F., 8 to 11 W., at 1; W., 2 to 5 M., at 1; M., 2 to 5	S. S. S. S.	
52—52	2	M., at 1; W., 8 to 11 F., at 11; F., 8 to 11 W., at 1; W., 2 to 5 M., at 1; M., 2 to 5	S. S. S. S.	

SURVEY OF AGRICULTURE

Course No.	Hours	Time	Room	Instructor
	1	M., at 4	T. 205	Vivian

VETERINARY MEDICINE

151—	3	M., W., F., at 8	V. L. 100	White
—152	3	To be arranged		Lambert

For Short Courses Only

51—52	3	M., Th., F., at 11	V. C.	Lambert, White
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ZOOLOGY AND ENTOMOLOGY

ZOOLOGY

101—102	3	L., Tu., Th., at 8	B. Z. 67, 109	All Instructors
		Tu., Th., at 9	B. Z. 67, 109	
		Tu., Th., at 10	B. Z. 67, 109	
		Tu., Th., at 1	B. Z. 67, 109	
		Tu., Th., at 2	B. Z. 67, 109	
		Tu., Th., at 3	B. Z. 67, 109	
		Lab., M., 1 to 3	B. Z. 65, 69	
		W., 8 to 10	B. Z. 65, 69	
		W., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10		
		Th., 1 to 3		
		F., 8 to 10	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	
		Pre-Medics and Dentistry		
		M., W., at 10	B. Z. 67	
		M., 8 to 10	B. Z. 65, 69	
—101	3	M., W., at 2; M., 8 to 10	B. Z. 67, 65	Barrows
115—115	3	M., W., F., at 10	B. Z. 211	
121—122	3	L., Tu., at 1	B. Z. 111	Kostir
		Lab., Tu., 2 to 4; Th., 1 to 3		
123—	2	To be arranged	B. Z.	Kostir
—124	2	To be arranged	B. Z.	Osburn, Kostir
129—	2 to 5	M., Th., at 11	B. Z. 67	Barrows
—130	2 to 5	M., Th., at 11	B. Z. 67	Barrows
131—132	3	M., Th., F., at 11	B. Z. 109	Osburn
139—140	2	M., at 10; Tu., 1 to 4	B. Z.	Hine
141—142	3 to 5	To be arranged	B. Z.	
145—	3	To be arranged	B. Z.	Barrows
153—154	2 to 5	M., W., at 9	B. Z. 67	Barrows

ZOOLOGY AND ENTOMOLOGY—Continued

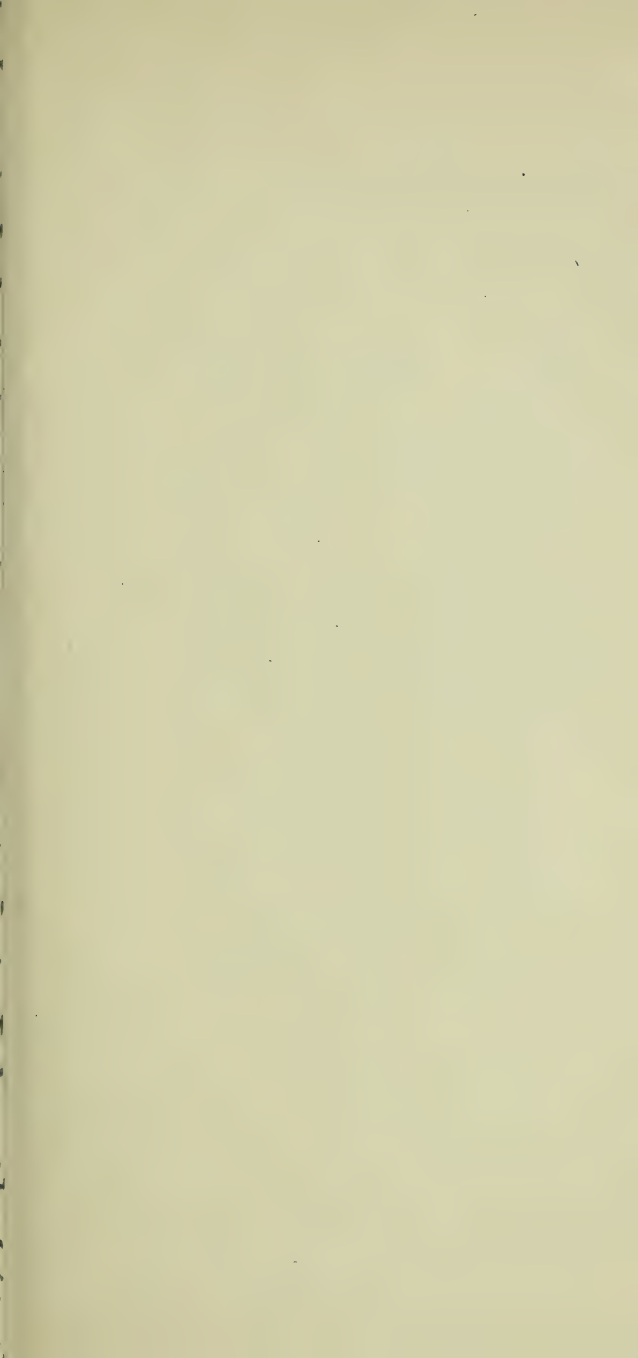
Course No.	Hours	Time	Room	Instructor
—158	3	M., F., at 11; W., 1 to 4	B. Z. 111	Krecker
159—160	3 to 5	L., W., F., at 8 Lab., to be arranged	B. Z. 209	Krecker
201—202	1	To be arranged	B. Z.	Osburn
223—224	3 to 5	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	
247—248	5	To be arranged	B. Z.	Osburn

ENTOMOLOGY

107—108	3	L., M., W., at 8 M., W., at 1 Lab., Tu., 8 to 10 Tu., 1 to 3	B. Z. 109 B. Z. 67 B. Z. 65, 69 B. Z. 65, 69	Metcalf Metcalf Metcalf Metcalf
—112	3	Tu., Th. at 8 Lab., Th., 1 to 4 S., 8 to 11	B. Z. 211 B. Z.	Hine
113—114	4	M., W., at 10 Lab., M., W., F., 1 to 4	B. Z. B. Z. 107	Metcalf
137—138	3 to 5	M., W., at 10 Lab., M., W., F., 1 to 4	B. Z.	Metcalf
141—142	3 to 5	To be arranged	B. Z.	
147—	2	Tu., Th., at 10	B. Z. 211	Hine
—148	2	M., W., at 9	B. Z.	Osburn
149—150	3 to 5	M., F., at 11 Lab., F., 8 to 11	B. Z. 211	Metcalf
151—152		Tu., at 11 Lab., Tu., F., 1 to 4	B. Z. 211	Metcalf
155—156	3	M., W., F., at 9	B. Z. 211	Hine
—162	4	To be arranged	B. Z.	
201—202	1	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	

For Short Courses Only

51—52	4	M., W., Th., F., at 2	B. Z. 211	Hine
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The Ohio State University Bulletin is issued at least twenty times during the year; monthly in June, July, August, and September, and bi-weekly in October, November, December, January, February, March, April, and May.

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VOLUME XXIV

MARCH 15, 1920

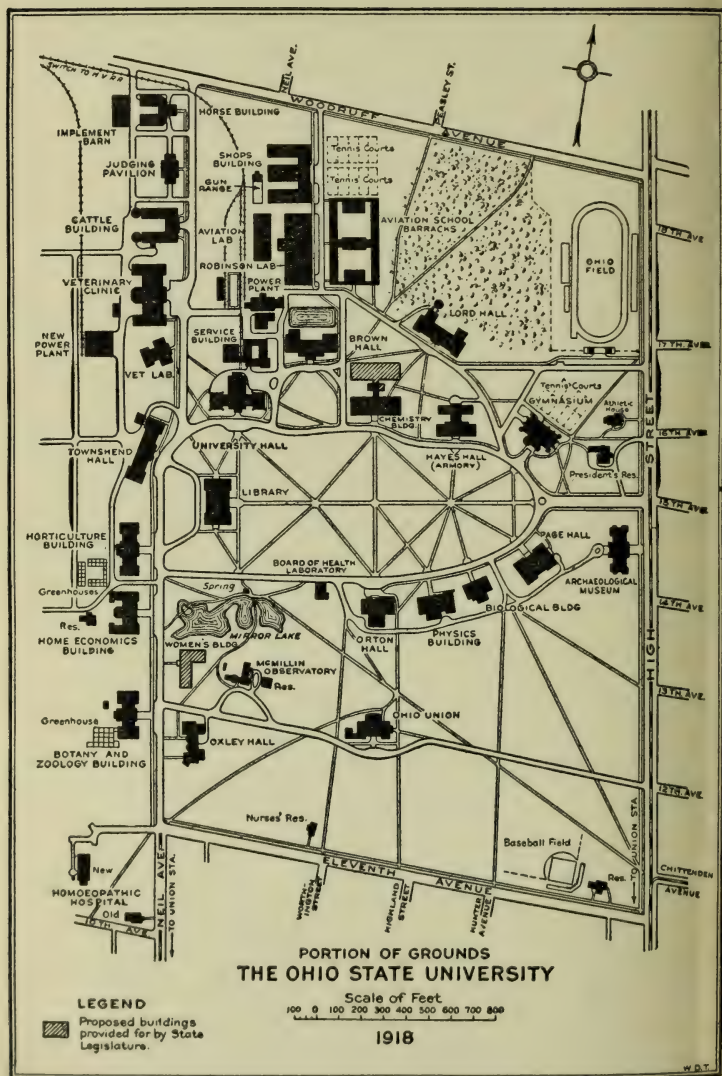
NUMBER 21

COLLEGE OF AGRICULTURE

1920-1921

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice at Columbus, Ohio, under Act of Congress, July 16, 1894. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, Authorized July 10, 1918.



UNIVERSITY CALENDAR

1920

Summer Session, Monday, June 21 to Friday, August 13.

Entrance examinations, Tuesday to Saturday, 8 A. M., June 22 to 26.

Entrance examinations, Tuesday to Saturday, 8 A. M., September 7 to 11.

Registration Day—First Semester—Tuesday, September 14.

President's Annual Address, Wednesday, September 15, 11 A. M.

Latest date for registration of candidates for a degree at the Commencement in June, 1921, October 1.

Registration Day, Short Courses in Agriculture—First Term—Tuesday, October 19.

Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 10.

Thanksgiving recess begins November 24, 1 P. M., and ends November 30, 8 A. M.

Christmas recess begins Friday, December 17, 6 P. M.

1921

Christmas recess ends Tuesday, January 4, 8 A. M.

Registration Day, Short Courses in Agriculture—Second Term—Tuesday, January 4.

Final examinations, Wednesday, January 26, to Thursday, February 3.

Farmers' Week, Monday, January 31 to Friday, February 4.

First semester ends Thursday, February 3, 6 P. M.

SECOND SEMESTER

Registration Day—Second Semester—Tuesday, February 8.

University Day, Tuesday, February 22.

Close of Second Term, Short Courses in Agriculture, Friday, March 18.

Easter recess, Thursday noon, March 24 to Tuesday, March 29, 8 A. M.

Mid-semester reports to the Deans, Wednesday, April 13.

Competitive Drill—Cadet Regiment—Saturday, May 28.

Memorial Day, Monday, May 30.

Final examinations, Wednesday, June 1, to Thursday, June 9.

Commencement, Tuesday, June 14.

Summer Session, Monday, June 20 to Friday, August 12.

Entrance examinations, Tuesday, June 21, to Saturday, June 25, 8 A. M.

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THE FRANKLIN CO. CHI.														THE FRANKLIN CO. CHICAGO													
JANUARY.							FEBRUARY.							MARCH.							APRIL.						
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Residence: 1461 Inglis Ave.—H. 1424

THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the city of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises a graduate school and eleven colleges, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Education
College of Agriculture	College of Engineering
College of Arts, Philosophy and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1920-1921.

(NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.)

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this college consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a school:

ANIMAL HUSBANDRY SCHOOL. Soil Fertility, Farm Crops, and Animal Husbandry.

DAIRY SCHOOL. Soil Fertility, Farm Crops, and Dairying.

HORTICULTURAL SCHOOL. Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

HOMEMAKERS' COURSE. Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information concerning the Agricultural Extension Schools, and for all information in regard to extension work, address the Director of Agricultural Extension, Ohio State University, Columbus, Ohio.

SCIENCE NURSING

The Science Nursing Curriculum offers preparation for women as supervising nurses, hospital superintendents, social service nurses, industrial nurses, and hospital dietitians. It enables the student to accomplish in five calendar years what would ordinarily require seven academic years.

The Science Nursing Curriculum is offered by the Ohio State University in cooperation with the Protestant Hospital Training School for Nurses. The work in this Curriculum parallels closely the first three years of the Curriculum in Home Economics and the Three-Year Curriculum in Nursing of the Protestant Hospital Training School for Nurses.

The proposed Curriculum meets the requirements of the National League for Nursing Education, the American Nurses

Association, the National Organization for Public Health Nursing, and the legal requirements of the state of Ohio. The graduates of this course will be eligible for admission to the State examination for the registration of nurses.

Upon the satisfactory completion of the work prescribed in the Ohio State University and the Protestant Hospital Training School for Nurses the student will be recommended for the degree of Bachelor of Science and a Diploma in Nursing.

GENERAL INFORMATION

RESERVE OFFICERS' TRAINING CORPS

Under the law of Congress establishing the land grant colleges, it is required that instruction in Military Science and Tactics be included in the curricula. This instruction is given under the Defense Act of June 3, 1916, establishing in the University the Reserve Officers' Training Corps. Under normal conditions, six commissioned officers and eleven non-commissioned officers of the regular army are detailed by the War Department to take charge of this department. The Board of Trustees has directed that all male students, special and regular, except those registered in the Colleges of Law, Medicine, Homoeopathic Medicine, and Dentistry, shall complete two years of military service unless especially excused by the Military and Gymnasium Board.

Foreign students are not exempt from military training, nor is self-support an adequate reason for excusing a student from the requirement in Military Science.

The Reserve Officers' Training Corps is organized as a brigade consisting of two regiments of infantry, each composed of three battalions of four companies each, and one regiment of field artillery, composed of two battalions of three batteries each, a band of sixty pieces, and a trumpet corps. There are two companies of men from the students in the Three-Year Course in Agriculture. The total number of men under arms averages about three thousand.

The course of instruction is both practical and theoretical, and divided into basic and advanced courses in both infantry and field artillery. One-half of the time is devoted to theoretical work in the classroom, and one-half of the time to practical

work in the field. The basic courses are required of all freshmen and sophomores. The advanced courses are elective for juniors and seniors. Students completing the advanced course when recommended by the Commandant and the President of the University are granted a commission as Second Lieutenant in the Officers' Reserve Corps by appointment from the President of the United States. No student is eligible for the advanced course until he has satisfactorily completed the basic course or its equivalent.

Uniforms and equipment are furnished by the War Department. Students who are taking advanced courses in Military Science also receive forty cents per day as commutation of rations in addition to their uniforms.

The appointment of cadet officers is made usually from those who have served in the Military Department at least one year and as a reward for excellence in their work. No compensation is paid to officers who are completing their first two years of service in the Military Department, the only exception being those who have had the equivalent of the required two years in service elsewhere. The compensation awarded at the end of each year of satisfactory service is thirty dollars for lieutenants, forty dollars for captains, and proportional sums for officers of higher rank.

Service in the band is credited as military service, the positions being assigned after competitive try-out. Members of the band who have completed two years of service in the Military Department or its equivalent are paid at the rate of twenty dollars per year and receive instruction during the four winter months from a competent band master.

WOMEN STUDENTS

As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed four dollars a week. Prospective women students should address Miss Elisabeth Conrad, Dean of Women, the Ohio State University, Columbus, Ohio.

FEES AND EXPENSES

GENERAL CHARGES

All University fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until all fees have been paid. No student will have any privileges in the classes or laboratories until all fees and deposits are paid.

Since all fees are due and payable as a part of the student's registration, no person should come to the University for registration without money sufficient to cover all of his fees and deposits.

Matriculation Fee. Every student upon his first admission to the University is required to pay a matriculation fee of \$10.00. This fee is paid but once, and is in addition to other University fees and entitles the student to the privileges of membership in the University. (Effective June 1, 1920.)

Non-Resident Fee. Every undergraduate student who is not a legal resident of the State of Ohio is required to pay a non-resident fee of \$25.00 each semester of his residence in the University in addition to other University fees. The burden of registering under proper residence is placed upon the student. If there is any possible question of his right to legal residence, the matter should be brought to the attention of the Registrar and passed upon, previous to registration or the payment of fees. Any student who registers improperly under this rule shall be required to pay not only the non-resident fee but shall be assessed a penalty of \$10.00. (Effective June 1, 1920.)

No person shall be considered eligible to register in the University as a resident of the State of Ohio unless he has resided in the State twelve months next preceding the date of his proposed enrollment; and no person shall be considered to have gained a residence in this State for the purpose of registering in the University while he is a student in the University.

The residence of minors shall follow that of the legal guardian.

The residence of wives shall follow that of husbands.

Aliens who have taken out their first citizenship papers and who have been residents of Ohio for twelve months next preceding the date of their enrollment in the University, shall be regarded as eligible for registration as residents of Ohio.

Incidental Fee. The fee for all students is fifteen dollars a semester.

The fee for the short courses is ten dollars a term.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit ranging from two to fifteen dollars for each course requiring such supplies is made at the Bursar's office before the student can enter the laboratory. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at cost to the University, and charged against the deposit. Any unused part of the deposit is refunded at the end of the semester.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid to the Bursar of the University before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms can be obtained at prices varying from ten to fifteen dollars per month. Board

at the restaurants and boarding clubs near the University costs from six and a half to eight dollars per week. Board, with furnished rooms, can be obtained in private families at rates varying around ten dollars per week.

Board can be secured at the Ohio Union Commons at reasonable rates.

Textbooks. Students should not purchase textbooks until they are advised by the instructors of their respective classes.

EXPENSES PER YEAR

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and boarding at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Matriculation fee.....	\$10 00
Incidental fee.....	30 00
Ohio Union.....	2 00
Gymnasium locker.....	4 00
Deposits to cover laboratory materials and breakage	30 00
Books	30 00
Board—36 weeks at \$8.00 per week.....	288 00
Room rent, at \$15.00 per month.....	135 00
General expenses.....	100 00
	<hr/>
	\$629 00

The item of general expenses is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, books and other expenditures incident to securing a room and board, a student should come prepared to expend from \$75.00

to \$100.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

ASSISTANTSHIPS AND SCHOLARSHIPS

GRADUATE ASSISTANTSHIPS

To encourage graduates of this University, and of other similar and approved institutions, especially those in Ohio, to continue their studies and to undertake advanced work leading to the higher degrees, the University has established assistantships in several departments. These demand from one-quarter to one-half of the time of the student for laboratory and other similar assistance—as far as possible along the line of his major subject. The remainder of his time is given to graduate work. The assistantships pay from \$250 to \$500 for the academic year and in addition all fees are remitted, except the matriculation fee, and a diploma fee for those students who receive degrees. Appointments to all assistantships are made annually in April or May for the following year. Students desiring such appointments can obtain application blanks by addressing the Dean of the Graduate School. Applications must be filed not later than March 1st.

SCHOLARSHIPS AND FELLOWSHIPS

In addition to the graduate assistantships, a limited number of scholarships and fellowships have also been established. The scholarships are open to students having a baccalaureate degree from an approved institution, and have a value of \$250 with exemption from all fixed fees except the matriculation fee. The fellowships on the other hand are open only to students who have at least the Master's degree or its equivalent, and have a value of \$500 with like exemption from all fixed fees except the matriculation fee. Scholars and fellows are selected on a basis of merit and must devote all their time to graduate work. Candidates for these positions should file their applications not later than March 1st. Application blanks may be obtained by addressing the Dean of the Graduate School.

FREE SCHOLARSHIPS

Two types of free scholarships are offered in the College of Agriculture:

(1) Scholarships good for four-year courses in the College of Agriculture.

(2) Scholarships good for the three-year courses in Agriculture and Horticulture.

FOUR-YEAR SCHOLARSHIPS

Twenty of these scholarships are assigned to each of the four districts into which the State is divided by the State Superintendent of Public Instruction for the purpose of supervising agricultural instruction given in public schools.

Each scholarship is good for four years, and five of them become available in each district each year.

These scholarships are awarded to graduates of first and second grade high schools, through a competitive examination in high school agriculture that is held under the supervision of the State Supervisors of Agricultural Education.

SHORT COURSE SCHOLARSHIPS

Three of these scholarships are assigned to each county in the State. Each scholarship is good for three years, and one becomes available each year.

These scholarships are awarded upon the recommendation of the Farm Bureau of each county.

VALUE OF SCHOLARSHIPS

The scholarships cover the University fixed fee. In the short courses a student saves \$20 per year, and in the four-year courses, \$30 per year.

For further information concerning these scholarships address the Dean of the College of Agriculture, The Ohio State University, Columbus, Ohio.

THE SHEPHERD'S SCHOLARSHIP

The Philadelphia Wool and Textile Association offers a scholarship of one hundred and fifty dollars to a disabled soldier appointed by the Faculty of the Department of Animal Husbandry, who wishes to specialize in sheep husbandry work. This scholarship requires that the applicant be a college graduate, and provides for him to receive special work in sheep husbandry subjects during the entire year as his major line of work.

ADMISSION

The College is open on equal terms to both sexes. Applicants for admission must be at least sixteen years of age.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits which shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS FOR AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

An applicant for admission who does not present the recommended units in foreign language will be required to elect foreign language in his freshman year.

No applicant under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

REQUIREMENTS FOR HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be

presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large.

An applicant for admission who does not present these units will be required to carry courses in the University to make up the deficiency and this may delay her graduation.

REQUIREMENTS FOR SCIENCE NURSING

An applicant for admission to this course must be a graduate of a high school of the first grade or receive credit by examination for fifteen units.

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large. An applicant for admission who does not present these units will be required to carry courses in the University to make up the deficiency and this may delay her graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

SPECIAL STUDENTS OF MATURE YEARS

A person of mature years who is unable to meet the entrance requirements in all respects, under certain circumstances may be permitted to matriculate for specified courses for which he can demonstrate adequate qualifications. An applicant under 21 years of age will not be considered. Inquiry concerning such admission should be addressed to the Entrance Board, and, to receive consideration must reach the Board not less than ten days in advance of the opening of the semester.

ADMISSION TO SHORT COURSES

No examinations will be required for the Three-Year courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age. He must have completed the work of the eighth grade and have had one year of practical experience on the farm. This practical experience is interpreted as meaning one year's actual farm life, twelve consecutive months.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College except the curriculum in Home Economics, is made uniform.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
English	(101)	2	English	(104)	2
*Mathematics	(107)	3	*Physics	(109)	3
*Engineering Drawing	(125)	2	*Geology	(151)	3
*Shopwork	(101)	2	*Shopwork	(103)	2
Survey of Agriculture		1	Military Drill		1
Military Drill		1	Physical Education		1
Physical Education		1			

Students may substitute 4 hours of German, French or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students planning to specialize in Farm Crops should schedule Botany 101-102 the first year and Zoology 101-102 the second year.

Students expecting to major in Landscape Architecture should consult the outlined curriculum. (See page 19.)

*These courses may be taken in either semester.

SECOND YEAR

First Semester

Agricultural Chemistry	(103)	5
Botany	(101)	3
or		
Zoology	(101)	3
Military Drill		1

Second Semester

Soils	(152)	5
Botany	(102)	3
or		
Zoology	(102)	3
Military Drill		1

And at least 7 hours from the following:

Physiology	(101)	3	Physiology	(102)	3
Psychology	(101)	3	Psychology	(102)	3
Economics	(101)	3	Economics	(102)	3
Entomology	(107)	3	Entomology	(108)	3
Foreign Language		4	Foreign Language		4
*Animal Husbandry	(135)	4	Animal Husbandry	(137)	3
Horticulture	(101)	4	Horticulture (*118) or	(120)	4
Farm Crops (*101) or	(109)	4	*Agricultural Engineering	(101)	4
*Dairying	(101)	4	Dairying	(102)	4
Geology	(105)	3	Geology	(106)	3
English (105, 141 or 145)	2 or 3		English (106 or 133)	2 or 3	
Public Speaking	(101)	2	Meteorology	(101)	2
Anatomy	(101)	3	Public Speaking	(102)	2
Botany	(125)	4	Anatomy	(102)	3
Zoology	(121)	3	Farm Crops	(111)	4
Zoology	(115)	3	Botany	(126)	4
			Zoology	(122)	3

*These courses may be taken in either semester.

THIRD YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

FOURTH YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 101-102, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural and forestry subjects must take Economics 101-102, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on page 19.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum as outlined on page 22.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine and Dentistry.

FARM EXPERIENCE

As a prerequisite for graduation in all the courses in the College of Agriculture, excepting Home Economics, students graduating in June, 1920, must have had two summers of farm experience; in 1921, three summers of farm experience; and in 1923, one full year of farm experience. This requirement shall

be interpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his junior year.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and thirty-six semester hours, exclusive of military drill and physical education, the student will be recommended for the degree, Bachelor of Science.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103, and Horticulture 150.

SECOND YEAR

First Semester		Second Semester	
Architecture	(131) 2	Art	(141) 2
Civil Engineering	(131) 5	Horticulture	(154) 3
Engineering Drawing	(108) 3	French	4
Horticulture	(151) 2	Horticulture	(152) 2
French	4	Horticulture	(158) 3
Horticulture	(157) 3	Landscape Design	
Landscape Design		Architecture	(132) 2
Military Drill	1	Military Drill	1

THIRD YEAR

Architecture	(133) 3	Architecture	(136) 3
History of Architecture		History of Architecture	
Art	(133) 2	Art	(136) 2
Economics	(101) 3	Economics	(102) 3
Civil Engineering	(133) 1	Horticulture	(162) 4
Horticulture	(159) 3	Horticulture	(160) 3
Advanced Landscape Design		Advanced Landscape Design	
Entomology	(155) 3	Elective	2 or 3
Elective	2 or 3		

FOURTH YEAR

Architecture	(113) 2	Art	(137) 3
Art	(147) 2	Botany	(116) 3
Horticulture	(145) 3	Plant Pathology	
Horticulture	(164) 3	Horticulture	(174) 3
Landscape Surveying		Civic Design	
Horticulture	(169) 3	Horticulture	(170) 3
Psychology	(101) 3	Horticulture	(166) 3
Horticulture	(173) 3	Landscape Engineering	
Civic Design			

HOME ECONOMICS

First Semester	FIRST YEAR		Second Semester	
Chemistry	(105 or 109)	4	Chemistry	(106 or 110) 4
Art	(131)	2	English	(104) 2
English	(101)	2	Art	(141) 2
Modern Language	(101 or 103)	4	Art	(119) 1
French or German			Modern Language	(102, 104 or 106) 4
Home Economics	(111)	2	French or German	(106) 2
Bibliography	(103)	1½	Home Economics	(112) 2
Physical Education		1	Physical Education	1

SECOND YEAR

First Given in 1921-1922

Chemistry	(127)	4	Agricultural Chemistry	(123) 4
Organic			Home Economics	(102) 5
Home Economics	(101)	5	Botany or Zoology	(102) 3
Botany or Zoology	(101)	3	Modern Language	(104 or 106) 4
Modern Language	(103)	4	French or German	
French or German			Engineering Drawing	(128) 1½
Engineering Drawing	(127)	1½	Physical Education	1
Physical Education		1		

THIRD YEAR

First Given in 1922-1923

Economics	(101)	3	Economics	(102) 3
Bacteriology	(107)	4	Home Economics	(104) 3
Agricultural Chemistry	(124)	4	Home Economics	(110) 4
Physiology	(101)	3	Home Economics	(118) 3
Elective		3	Physiology	(102) 3

FOURTH YEAR

Sociology	(101)	3	Sociology	(102) 3
Home Economics	(105)	2	Home Economics	(119) 4

Electives to make at least 15 hours throughout the year.

ELECTIVES

Home Economics	(121)	3	Home Economics	(106) 2 to 5
Home Economics	(113)	3	Home Economics	(113) 3
Art	(121)	2	Home Economics	(116) 3
Principles of Education	(101)	3	Art	(121) 2
Home Economics	(127)	3	Home Economics	(128) 3
Special Methods			Practice Teaching	
			Anatomy	(116) 3

SECOND YEAR

Given Only in 1920-1921

Chemistry	(127)	4	Agricultural Chemistry	(123) 4
Organic			Home Economics	(102) 5
Home Economics	(101)	5	Physiology	(102) 3
Physiology	(101)	3	Modern Language	(104 or 106) 4
Modern Language	(103)	4	French or German	
French or German			Art	(141) 2
Art	(131)	2	Physical Education	1
Physical Education		1		

THIRD YEAR

Given Only in 1920-1921 and 1921-1922

Economics	(101)	3	Economics	(102)	3
Bacteriology	(107)	4	Home Economics	(104)	3
Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Bibliography	(103)	½	Home Economics	(118)	3
Engineering Drawing	(127)	1½	Engineering Drawing	(128)	1½

Electives to make at least 15 hours throughout the year.

Electives for the third and fourth years must include not less than six hours of English, and for students not offering entrance credit in American history, six hours of American history.

Requirements for a Degree

Upon the satisfactory completion of the course as outlined, under the restrictions and requirements prescribed above, the student will be recommended for the degree, Bachelor of Science.

SUGGESTED ELECTIVES FOR HOME ECONOMICS:

Agricultural Chemistry	(125-126)	4-4
Chemistry of Food and Nutrition		
Agricultural Engineering	(115)	2
Household Mechanics		
Agricultural Engineering	(116)	3
Household Equipment		
Anatomy	(116)	3
The Digestive System		
(Recommended for students interested in Dietetics.)		
Animal Husbandry	(121)	1
Poultry Culture		
Art	(142)	3
Advanced Design		
Art	(143)	3
(Recommended for students interested in Interior Decoration)		
Bacteriology	(108)	2 to 5
Pathogenic Bacteria		
Economics	(119)	3
Women in Industry		
Economics	(120)	3
The Household		
Extension Methods	(102)	2
Greek	(115-116)	2-2
Greek Art		
Horticulture	(118)	4
Farm Horticulture		
Industrial Education	(135-136)	2-2
Craftwork for Women		
Journalism	(101-102)	3-3
News-collecting and News-writing		

Philosophy	(106)	3
Elementary Ethics		
Public Speaking	(101)	2
Public Health	(121)	2
Public Health Problems		
Public Health	(122)	2
Industrial Hygiene		
Rural Economics	(110)	3
Rural Community Life		
Sociology	(107)	3
The Family		
Sociology	(112)	4
Needy Families and Children		
Zoology	(115)	3
General Principles of Heredity		

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester		Second Semester	
Entomology	(107) 3	Entomology	(108) 3
Botany	(101) 3	Botany	(102) 3
Modern Language	4	Modern Language	4
French, Spanish or German		French, Spanish or German	
Farm Crops (101 or 109 or 111)	4	Art	(131) 2
Military Drill	1	Military Drill	1
Elective	2	Elective	4

THIRD YEAR

Entomology	(113) 4	Entomology	(114) 4
Bacteriology	(107) 4	Botany	(116) 3
Physiology	(101) 3	Bacteriology	(108) 4
or		Physiology	(102) 3
Anatomy	(101) 3	or	
Architecture	(111) 2	Anatomy	(102) 3
Elective	2 or 3	Elective	3

Elective: During the third year the student must elect either Zoology (158) 2 or Entomology (149) 3.

NOTE—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(147) 2	Entomology	(112) 3
Entomology	(151) 3	or	
Elective	9 or 10	Entomology	(162) 4
		Entomology	(148) 2
		Entomology	(152) 3
		Elective	8 or 9

Elective: During the fourth year the student must elect either Zoology (158) 2 or Entomology (149) 3, whichever was not elected during the third year.

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline of the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 16-19.

AGRICULTURAL CHEMISTRY AND SOILS

Students who take the major subject in Agricultural Chemistry and Soils may specialize in any of the following phases of the subject:

- Chemistry of Animal Nutrition.
- Chemistry of Dairy Products.
- Chemistry of Fertilizers.
- Chemistry of Plant Life.
- Chemistry of Soils.
- Food Inspection and Analysis.

All students intending to major in this department should consult Mr. Lyman or Mr. Bear for advice in outlining a curriculum. It is desirable that this consultation be held soon after admission to the College in order that the student may take best advantage of optional and elective privileges.

Students majoring in dairying, animal husbandry, crops, horticulture, botany and zoology can elect minors in the department of Agricultural Chemistry and Soils to advantage.

AGRICULTURAL EDUCATION

FUNDAMENTAL COURSES:

*Elementary Zoology	(101-102)	6
*General Botany	(101-102)	6
*Elementary Chemistry (105-106) or General Chemistry	(109-110)	8
*Agricultural Mathematics	(107)	3
*General Physics	(109)	3
*Principles of Geology	(151)	3
General Bacteriology	(107)	4
*Carpentry and Forging (Shopwork)	(101-103)	4
*Mechanical Drawing	(125)	2
*English	(101-104)	4
*Principles of Economics	(101-102)	6
*Survey of Agriculture		1

SCIENTIFIC AGRICULTURE:

*General Agricultural Chemistry	(103)	5
*Elementary Soils	(152)	5
Farm Crops		
*Field Crop Production	(101)	4
Cereal Crops	(109)	4
Forage Crops	(111)	4
*Farm Horticulture	(118)	4
*Economic Entomology	(107-108)	3
Animal Husbandry		
*Elementary Live Stock Judging	(135)	4
Principles of Feeding	(137)	3
Dairy Cattle Production and Management	(145)	3
Poultry Husbandry	(117-118)	3
*Principles of Dairying	(101)	4
Agricultural Engineering		
*Farm Engineering	(101)	4
Drainage	(106)	3
Rural Economics		
Farm Accounting	(101)	2
Farm Management	(103)	4
*Agricultural Economics	(104)	3

PROFESSIONAL EDUCATIONAL SUBJECTS:

Psychology		3
Principles of Teaching		3
Rural Community Life	(110)	3
Methods of Teaching Vocational Agriculture	(101)	3
Observation Teaching of Agriculture	(103)	2
Practice Teaching of Agriculture	(104)	2
Methods of Agricultural Extension	(102)	2
Elective		8
Total		136

Students wishing to major in departments in which only one course is recommended above may, by consulting the department of Agricultural Education, make arrangements for substitutions that will enable them to major in any department.

*Required courses in the College of Agriculture.

ANIMAL HUSBANDRY

FIRST YEAR: Uniform first year

SECOND YEAR: Animal Husbandry (135) 4 hours
 Elementary Live Stock Judging
 Animal Husbandry (137) 3 hours
 Principles of Feeding

THIRD YEAR:	Animal Husbandry	(139)	3 hours
	Horse Production and Management		
	Animal Husbandry	(141)	3 hours
	Beef Cattle Production and Management		
	Animal Husbandry	(143)	3 hours
	Swine Production and Management		
FOURTH YEAR:	Animal Husbandry	(145)	3 hours
	Dairy Cattle Production and Management		
	Animal Husbandry	(147)	3 hours
	Sheep Production and Management		
	Animal Husbandry	(151)	3 hours
	Advanced Live Stock Judging		
	Animal Husbandry	(153)	3 hours
	Meats and Meat Products		
	Agricultural Chemistry.....	(111-112)	2 or 4—2 or 4 hours
	Animal Nutrition		
	Animal Husbandry	(155)	3 hours
	Live Stock Markets and Marketing		
	Animal Husbandry	(157)	4 hours
	Breeding Farm Animals		
	Animal Husbandry.....	(163-164)	2 to 5—2 to 5 hours
	Research and Thesis		

POULTRY HUSBANDRY

THIRD YEAR:	Animal Husbandry	(117-118)	3—3 hours
	Poultry Husbandry		
	Animal Husbandry	(120)	1 hour
	Poultry Feeding		
FOURTH YEAR:	Animal Husbandry	(122)	1 hour
	Incubator Practice		
	Animal Husbandry	(119)	2 hours
	Poultry Management		
	Animal Husbandry	(124)	2 hours
	Poultry Judging		

DAIRYING

FIRST YEAR:	Uniform first year		
SECOND YEAR:	Dairying	(101)	4 hours
	Principles of Dairying		
	Dairying	(102)	4 hours
	Farm Dairying		

THIRD YEAR:	Dairying	(115)	2 hours
	Dairy Buildings		
	Dairying	(105)	4 hours
	Buttermaking		
	Dairying	(111)	1 hour
	Dairy Mechanics		
	Dairying	(107)	3 hours
	Cheesemaking		
	Bacteriology	(107)	4 hours
FOURTH YEAR:	General Bacteriology		
	Bacteriology	(110)	4 hours
	Dairy Bacteriology		
	Dairying	(113-114)	2—2 hours
	Advanced Dairying		
	Dairying	(103)	4 hours
	City Milk Supply		
	Dairying	(110)	2 hours
	Ice Cream Making		
	Dairying	(119-120)	1—1 hour
	Proseminary		
	Dairying	(116)	2 hours
	Milk Condensing		

FARM CROPS

FIRST YEAR:	Botany 101-102 instead of Zoology 101-102		
	Otherwise, uniform first year		
SECOND YEAR:	Farm Crops	(101)	4 hours
	Field Crop Production		
	Zoology	(115)	3 hours
	General Principles of Heredity		
	Farm Crops	(109)	4 hours
	Cereal Crops		
	Farm Crops	(111)	4 hours
THIRD YEAR:	Forage Crops		
	Farm Crops	(113)	3 hours
	Plant Breeding		
	Farm Crops	(123)	2 hours
	Crop Ecology		
	Farm Crops	(112)	2 hours
	Special Crops		
FOURTH YEAR:	Botany	(125-126)	4—4 hours
	Plant Physiology		
	Botany	(116)	3 hours
	Plant Pathology		
	Farm Crops	(119-120)	2—2 hours
	Minor Investigations		

FLORICULTURE

FIRST YEAR: Uniform first year

SECOND YEAR: Horticulture(101) 4 hours
 Principles of Horticulture
 Horticulture(132) 4 hours
 Greenhouse Construction and Management

THIRD YEAR: Horticulture(141-142) 4—4 hours
 Commercial Floriculture
 Horticulture(145-146) 3—3 hours
 Garden Flowers
 Horticulture(156) 2 hours
 Landscape Architecture

FOURTH YEAR: Horticulture(143) 3 hours
 The Flower Shop
 Horticulture(107) 3 hours
 Plant Variations
 Horticulture(147-148) 3—3 hours
 Systematic Floriculture
 Horticulture(144) 3 hours
 Conservatory and Bedding Plants

POMOLOGY AND VEGETABLE GARDENING

FIRST YEAR: Uniform first year

SECOND YEAR: Horticulture(101) 4 hours
 Principles of Horticulture
 Horticulture(120) 4 hours
 Small Fruits and Grapes

THIRD YEAR: Horticulture(103-104) 4—4 hours
 Commercial Vegetable Gardening
 Horticulture(105-106) 4—4 hours
 Pomology

FOURTH YEAR: Horticulture(109-110) 3—3 hours
 Experimental Horticulture
 Horticulture(133) 3 hours
 Horticultural Products
 Horticulture(132) 4 hours
 Greenhouse Construction and Management
 Horticulture(121-122) 4—4 hours
 Systematic Pomology
 Horticulture(131) 4 hours
 Systematic Vegetable Gardening
 Horticulture(140) 3 hours
 Amateur Floriculture

PLANT PATHOLOGY

FIRST YEAR: Uniform first year

SECOND YEAR: Botany(128) 4 hours
 Plant Morphology
 Botany(116) 3 hours
 Plant Pathology

THIRD YEAR: Botany(127-128) 4—4 hours
 Plant Pathology
 Botany(125-126) 4—4 hours
 Plant Physiology
 Bacteriology(107) 4 hours

FOURTH YEAR: Botany(139-140) 3—3 hours
 Advanced Plant Pathology
 Botany(151-152) 3—3 hours
 Plant Micro-Chemistry
 Entomology(107-108) 3—3 hours

RURAL ECONOMICS

FIRST YEAR: Uniform first year

SECOND YEAR: Economics(101-102) 3—3 hours
 Principles of Economics
 Rural Economics(101) 2 hours
 Farm Accounting

THIRD YEAR: Rural Economics(104) 3 hours
 Agricultural Economics
 Rural Economics(110) 3 hours
 Rural Community Life
 Rural Economics(113) 3 hours
 The Distribution of Farm Products

FOURTH YEAR: Rural Economics(103) 4 hours
 Farm Management
 Rural Economics(116) 2 hours
 Cooperation in Agriculture
 Rural Economics(102) 2 hours
 Advanced Farm Accounting
 Rural Economics(118) 2 hours
 Rural Community Development
 Rural Economics(105) 2 hours
 Historical and Comparative Agriculture
 Rural Economics(111) 1 hour
 Advanced Farm Management

CURRICULUM IN SCIENCE NURSING

FIRST YEAR

(At the University)

First Semester				Second Semester			
Chemistry	(105) or	(109)	4	Chemistry	(106) or	(110)	4
English		(101)	2	English		(104)	2
Paragraph Writing				Paragraph Writing			
Anatomy		(101)	3	Anatomy		(116)	3
Elementary				Digestive System			
Psychology		(101)	3	Psychology		(102)	3
Elementary				Elementary			
English		(133)	3	English		(146)	3
Engineering Drawing		(127)	1½	Engineering Drawing		(128)	1½
Mechanical Drawing				House Planning			
Physical Education		(181)	1	Physical Education		(132)	1

SECOND YEAR

(At the University)

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic Chemistry			Household Chemistry		
Physiology	(101)	3	Physiology	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	4	Bacteriology	(108)	4
Physical Education	(133)	1	Physical Education	(184)	1

At the close of the second semester of the second year, the student will report immediately to the Protestant Hospital Training School for Nurses for the preliminary nursing period of twelve weeks.

SUMMER TERM

PRELIMINARY NURSING PERIOD

(At the Protestant Hospital)

Science Nursing	(101)	3
Elementary Nursing		
Science Nursing	(102)	1
History and Ethics of Nursing		
Science Nursing	(103)	1
Drugs and Solutions		
Science Nursing	(104)	7
Hospital Ward Duty		

The preliminary nursing period requires twelve weeks of eight hours per day with approximately one lecture and seven hours of ward duty each day.

THIRD YEAR

First Semester (At the Protestant Hospital)		Second Semester (At the University)	
Science Nursing	(111) 2	Agricultural Chemistry	(124) 4
Elements of Pathology		Household Chemistry	
Science Nursing	(113) 2	Sociology	(101) 3
Medical Nursing		Economics	(120) 3
Science Nursing	(115) 1	The Household	
Surgical Nursing		Public Health	(121) 2
Science Nursing	(117) 1	Public Health Problems	
Materia Medica		Public Speaking	(102) 2
Science Nursing	(119) 10	Debating	
Hospital Ward Duty		Science Nursing	(122) 2
		Proseminary in Case Studies	

At the close of the second semester of the third year, the student will report immediately to the Protestant Hospital Training School for Nurses for the second nursing period of eight weeks. A month's vacation will be arranged.

SUMMER TERM

SECOND NURSING PERIOD

(At the Protestant Hospital)

Science Nursing.....	(123) 8
(Hospital Ward Duty)	

FOURTH YEAR

(At the Protestant Hospital)		(At the University)	
Science Nursing	(125) 1	Home Economics	(110) 4
Gynecological Nursing		Dietetics	
Science Nursing	(127) 1	Home Economics	(119) 4
Orthopedic Nursing		Household Management	
Science Nursing	(129) 2	Public Health	(106) 2
Obstetrical Nursing		Public Health Nursing	
Science Nursing	(131) 2	Public Health	(110) 2
Nursing in Diseases of Infants and Children		Preventive Medicine	
Science Nursing	(133) 2	Sociology	(112) 4
Nursing in Communicable Diseases		Needy Families and Children	
Science Nursing	(135) 1		
Nursing in Diseases of the Eye, Ear, Nose and Throat			
Science Nursing	(137) 1		
Operating Room Technic			
Science Nursing	(139) 6		
Hospital Ward Duty			

At the close of the second semester of the fourth year the student will report immediately to the Protestant Hospital

Training School for Nurses for the third nursing period of eight weeks. A vacation will be arranged.

SUMMER TERM

THIRD NURSING PERIOD

(At the Protestant Hospital)

Science Nursing..... (141) 8
(Hospital Ward Duty)

FIFTH YEAR

First Semester

Second Semester

The work of these two semesters will be arranged between the Protestant Hospital Training School for Nurses and the University. The student will be permitted to make a selection of the field of nursing in which she wishes to specialize. The courses selected must aggregate not less than sixteen credit hours for each semester. Elective courses, divided into field and class-room work, will be arranged covering institutional nursing, private duty nursing and public health nursing. These courses will include hospital administration; hospital social service; nursing in mental and nervous diseases; nursing in skin, occupational and venereal diseases; nursing in diseases of infants and children; district nursing, school nursing, tuberculosis nursing and industrial nursing.

Degree.—Upon the satisfactory completion of the work prescribed above the student will be granted the degree of Bachelor of Science and a Diploma in Nursing.

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula continuing five years, are cooperative between the University and other colleges of the State, and be-

come effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the cooperating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capital University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science at the end of five years.

FIRST YEAR

First Semester		Second Semester	
English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Zoology	(101) 3	Zoology	(102) 3
or		or	
Botany	(101) 3	Botany	(102) 3
American, European or		American, European or	
Industrial History	3	Industrial History	3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

English	(141 or 145) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Engineering Drawing	(125) 2	Art	2
Modern Language	4	Modern Language	4
Military Drill	1	Military Drill	1

THIRD YEAR

First Semester		Second Semester	
Economics	(101) 3	Economics	(102) 3
Physics	(103) 4	Physics	(104) 4
Geology	3	Geology	3

Elective 6 or 7 hours the year on approval of adviser.

FOURTH YEAR

Animal Husbandry	4		
Agricultural Chemistry	4	Choice of any two of these the fourth	
Rural Economics	3	year. Remaining two the fifth year.	
Farm Crops or Soils	4 or 5		

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the Senior year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
American, European or		American, European or	
Industrial History	3	Industrial History	3
Military Drill	1	Military Drill	1
Physical Education	1	Physical Education	1

SECOND YEAR

English	(141 or 145) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Engineering Drawing	(125) 2	Art	(131) 2
Modern Language	4	Modern Language	4
Military Drill	1	Military Drill	1

THIRD YEAR

First Semester		Second Semester	
Economics	(101) 3	Economics	(102) 3
Physics	(103 or 105) 4	Physics	(104 or 106) 4
Geology	(103) 3	Geology	(104) 3
Entomology	(107) 3	Entomology	(108) 3
or		or	
Botany	(125) 4	Botany	(126) 4
Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy and Science.			

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year).

Agricultural Chemistry (5 hours throughout the year).

In addition to these six hours elective throughout the year, with the approval of the department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the department of Horticulture:

Horticulture	(105 and 106) 4
Pomology	
Botany	(125 and 126) 4
Entomology	(107 and 108) 3
Rural Economics	(103 and 104) 3 or 4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the Junior year a choice of either Entomology 107-108 or Botany 125-126 are added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
English	(101) 2	English	(104) 2
French or German	4	French or German	4
American History	(101) 3	American History	(102) 3
or		or	
European History	(101) 3	European History	(102) 3
Zoology	(101) 3	Zoology	(102) 3
or		or	
Botany	(101) 3	Botany	(102) 3
Physical Education	1	Physical Education	1

SECOND YEAR

First Semester

Second Semester

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Physiology	(101)	3	Physiology	(102)	3
French or German		4	French or German		4
Art	(119)	1	Home Economics	(112)	2
Home Economics	(111)	2	Textiles		
Textiles			Engineering Drawing	(128)	1½
Engineering Drawing	(127)	1½	Physical Education		1
Physical Education		1			

THIRD YEAR

Economics	(101)	3	Economics	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Foods			Foods		
Bacteriology	(107)	4	Home Economics	(104)	3
English	(141 or 145)	3	Sanitation		
Art	(131)	2	English	(133)	3
			Art	(141)	2

FOURTH YEAR

Agricultural Chemistry	(124)	4	Home Economics	(110)	4
Psychology	(101)	3	Dietetics		
Sociology	(101)	3	Psychology	(102)	3
Home Economics	(118)	3	Sociology	(102)	3
The House			Home Economics	(119)	4
Elective		3	Household Management		
			Elective		3

FIFTH YEAR

Home Economics	(105)	2	History of Education	(102)	3
Proseminary			Elective		12
History of Education	(101)	3			
Elective		9			

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3).

Economics 120 (3).

Sociology 107 (3).

Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).

Chemistry 151-152 (2—2), 153-154 (2 or 3—2 or 3).

Philosophy 115 (2)—116 (2).

Greek 115 (2)—116 (2).

Physiology 106 (4).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements of the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

First Term			Second Term		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Agricultural Engineering	(51)	4	Dairying	(52)	3
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

Horticulture	(53)	4	Horticulture	(54)	4
Soils	(53)	3	Soils	(54)	3
Dairying	(53)	3	Agricultural Engineering	(52)	4
Rural Economics	(51)	4	Animal Husbandry	(54)	4
Farm Crops	(51)	4	Farm Crops	(52)	4
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

First Term

Second Term

Rural Economics	(52)	4	Agricultural Engineering	(54)	4
Animal Husbandry	(57)	4	Animal Husbandry	(56)	4
Military Drill		1	Military Drill		1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59)	3	Animal Husbandry	(60)	3
Veterinary Medicine	(51)	3	Veterinary Medicine	(52)	3
Horticulture	(55)	4	Horticulture	(56)	4
Bacteriology	(51)	4	Entomology	(52)	4
Agricultural Engineering	(53)	3	Dairying	(56)	3
Animal Husbandry	(53)	4	Horticulture	(58)	4
Horticulture	(57)	4	Horticulture	(60)	4
Botany	(91)	4	Rural Economics	(54)	4
Rural Economics	(53)	4	Dairying	(58)	3
Dairying	(57)	3			
Horticulture	(67)	4			
Entomology	(51)	4			
Dairying	(55)	3			

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Horticulture	(51)	4	Horticulture	(52)	4
Horticulture	(53)	4	Horticulture	(54)	4
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1

SECOND YEAR

Soils	(53)	3	Soils	(54)	3
Entomology	(51)	4	Entomology	(52)	4
Horticulture	(55)	4	Horticulture	(56)	4
Dairying	(52)	3	Dairying	(53)	3
Military Drill		1	Military Drill		1
Physical Education		1	Physical Education		1
Elective	3 or 4		Elective	3 or 4	

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57)	4	Horticulture	(58)	4
Horticulture	(67)	4	Horticulture	(60)	4
Rural Economics	(51)	4	Rural Economics	(52)	4
Military Drill		1	Military Drill		1
Elective	6		Elective	6	

ELECTIVES

First Term		Second Term	
Animal Husbandry	(59) 3	Animal Husbandry	(60) 3
Bacteriology	(51) 4	Dairying	(56) 3
Dairying	(57) 3	Dairying	(58) 3
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4
Horticulture	(59) 4	Horticulture	(66) 4
Horticulture	(65) 4		
Dairying	(55) 3		

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in agriculture offered by the University. There is a large number of young men located on the farms of our State, who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year but yet desire some training in the principles of agriculture. On other farms are found mature men, who are past the usual school age but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigations in research and their practical application to work on the farm.

DAIRYING

The work in Dairying is divided into two courses of four weeks each. The first course, "Farm Dairying and Advanced Registry," beginning January 3rd, 1921, and ending January 28th, 1921, will be given to meet the demand of those who wish to receive training in the formation of a dairy herd, the care, feeding and breeding of the herd, the production of milk, and the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufacturers," begins January 31st, 1921, and ends February 25th, 1921. This course has

been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter, cheese and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this department and is given at a time of the year when the butter-makers, cheese-makers, ice cream-makers and milkmen can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN, LYMAN, AND BEAR, ASSISTANT PROFESSOR
T. G. PHILLIPS, MR. McCLURE, MR. CONREY, MR. WATSON

AGRICULTURAL CHEMISTRY

Students expecting to major in Agricultural Chemistry and Soils are requested to interview Professors Lyman and Bear concerning election of courses in this and related departments.

103. General Agricultural Chemistry. Five credit hours. First semester. Two lectures, one quiz and two laboratory periods each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

An introductory course on the chemistry of plants and animals.

115. General Agricultural Chemistry. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, a satisfactory course in organic chemistry. Mr. Phillips.

Lectures on the application of chemistry to plant and animal life. This course is intended for students who have had satisfactory preparation in organic chemistry, and for such students it takes the place of course 103 as a requirement. Students who have had work in quantitative analysis should consult with the department before registering for either of these courses.

123-124. Household Chemistry. Four credit hours. The year. (123) Home Economics, second year, second semester; (124) third year, first semester. Prerequisite, Chemistry 106 or 110 and 127. Mr. Lyman.

Lectures on household chemistry. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods and other materials of household interest.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisite, two years of Chemistry including Agricultural Chemistry 103. Mr. Lyman.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in dairying and should be accompanied or preceded by a course in dairying.

111-112. Animal Nutrition. Two to four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisites, Agricultural Chemistry 103 or equivalent, and Animal Husbandry 137. Mr. Lyman.

A chemical study of food constituents, their digestion and effect on the body. A discussion of problems in growth, maintenance and fattening of animals. The study of complex feeds, such as are used on the farm, from the standpoint of the more recent conceptions of animal nutrition. Laboratory work includes the separation and study of food nutrients, the determination of coefficients of digestibility, and the effect of selected rations on animals. The lectures may be taken alone for two credit hours.

113. Chemistry of Insecticides and Fungicides. Two credit hours. Second semester. One lecture and one laboratory period each week. Prerequisite, two years of chemistry including Agricultural Chemistry 103. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

114. Plant Chemistry. Two credit hours. Second semester. Two lectures each week. Prerequisite, two years of Chemistry including Agricultural Chemistry 103 or its equivalent in organic chemistry and quantitative analysis. Mr. Phillips.

Lectures will be given on the chemistry of plant constituents, plant metabolism and a few selected plant products.

116. Plant Chemistry. Two credit hours. Second semester. Six hours laboratory work each week. To be preceded or accompanied by Agricultural Chemistry 114. Mr. Phillips.

Work will be done along the lines of detection, determination and separation of plant constituents.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisite, Agricultural Chemistry 103 or equivalent. Mr. Lyman.

Lectures on the composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Five credit hours. Second semester. Two lectures, one quiz and six laboratory hours each week. Four-year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Vivian, Mr. Bear, Mr. McClure, Mr. Conrey.

An introductory course on the origin and the chemical and physical properties of soils, their management and fertilization.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

153-154. Soil Fertility. Two credit hours. The year. Prerequisite, Soils 152. Mr. Bear.

Lectures and references reviewing the investigational work which has been and is now being conducted on some of the more important soil problems.

155-156. Chemical Analysis of Soils. Three credit hours. The year. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. McClure.

A study of the methods in the quantitative chemical analysis of soils.

157. Origin and Classification of Soils. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Soils 152. Mr. Conrey.

A study of the soils of Ohio. Laboratory work will include practice in soil surveying. Field trips will be made, including a trip to the experimental farms at Wooster, and to several sub-station farms.

158. Soil Physics. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Conrey.

The application of the principles of physical chemistry to the study of soil problems.

162. Chemistry of Fertilizers. Four credit hours. Second semester. Two lectures and two laboratory periods each week. Prerequisite, Soils 152 and permission of the instructor. Mr. Bear, Mr. McClure.

Lectures on the processes of fertilizer manufacture and control. The laboratory work will include visits to various fertil-

izer plants, the chemical examination of the various fertilizing materials and practice in routine fertilizer analysis.

FOR GRADUATES

201-202. Research Work in Soils.

203-204. Soil Seminary.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL EDUCATION

Office, 103 Townshend Hall

PROFESSOR STEWART, ASSISTANT PROFESSORS JOHNSON AND FIFE,
MR. KENESTRICK

101. Teaching of Vocational Agriculture in Secondary Schools. Three credit hours. Either semester. Three lectures each week. Open to juniors and seniors who have obtained the consent of the department. Mr. Stewart.

The course of study, its essentials and its provisions for adaptation to local conditions; laboratory work, home projects, and illustrated material in their relation to class-room instruction; textbooks and library reference books in agriculture that meet the needs of secondary schools; the teacher of agriculture as a factor in community life.

103-104. Practice Teaching of Agriculture in Secondary Schools. Two credit hours. The year. Prerequisite, Agricultural Education 101 or Agricultural Education 101 concurrent with 103. Mr. Johnson.

Observation and practice teaching of secondary agriculture in nearby cooperating rural high schools will be given under the supervision of critic teachers. Class-room instruction, laboratory exercises and home projects as conducted in these schools will receive emphasis.

AGRICULTURAL ENGINEERING

Office, 201 Machinery Laboratory

PROFESSOR IVES, ASSISTANT PROFESSORS McCUEN, POTTER,
AND GREEN

101. Farm Engineering. Four credit hours. Either semester. Prerequisite, Engineering Drawing 125, Mathematics 107 and Physics 109. All instructors.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

103. Farm Structures. Three credit hours. First semester. Prerequisite, Engineering Drawing 125 and Mathematics 107. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing room work in designing farm structures and estimating cost of same.

106. Drainage. Three credit hours. Second semester. Prerequisites, Mathematics 107 and Soils 152. Mr. Potter.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth and distance apart. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit.

110. Advanced Farm Machinery. Three credit hours. First semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field and power machinery. Practice in assembling and disassembling some of the

machines studied, together with problems and tests covering various features of design and operation.

107. Farm Power. Four credit hours. Second semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, tractors, steam engines, wind-mills and electric power.

114. Design of Dairy Buildings. Two credit hours. Second semester. This course is designed for students specializing in Dairying, and must be preceded by Dairying 115 and Engineering Drawing 125. Mr. Ives.

A few lectures will be given relative to strength of materials and problems in design, but the greater part of the time will be devoted to the planning of ice-houses, milk-houses, dairy barns, cheese factories, condensories, manure pits, water supply and sewage disposal plants as related to the dairy business, following the specifications given in Dairying 115.

115. Household Mechanics. Two credit hours. First semester. Six laboratory hours each week. Mr. Potter.

This course is designed for girls taking home economics courses.

Laboratory exercises and instruction are given on soldering, pipe fitting, electrical connections and wiring, belt lacing, rope splicing, painting, use of tools and tool sharpening, cementing and glueing, meter reading, etc.

116. Household Equipment. Three credit hours. Second semester. Two lectures, three laboratory hours each week. Mr. Potter.

This course is designed for home economics students and others interested in the mechanical equipment of the home and should be preceded by Agricultural Engineering 115.

Lectures will be given on the construction, care and operation of the various types of laundry equipment, irons, cleaning devices, electrical appliances, plumbing fixtures, pumps, water supply systems, lighting plants, small gas engines, etc.

Laboratory work in the adjustment and operation of these devices.

117. Dairy Mechanics. One credit hour. First semester. Prerequisite, Agricultural Engineering 101 and permission of the instructor. Concurrent with Dairying 111. Mr. Green.

Laboratory work in pipe fitting, belt lacing, soldering, and babbiting, construction and operation of steam boilers, steam and gas engines, pumps, etc.

118. Field Machinery. Three credit hours. Second semester. Six laboratory hours each week. Prerequisite, Agricultural Engineering 101. Mr. Green.

Lecture, quiz and laboratory exercises covering the various field machines used on the farm, such as tillage, seeding, harvesting and belt driven machinery.

Laboratory work to consist of written reports of detailed study and tests of the machines.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Ives, Mr. McCuen, Mr. Potter, Mr. Green.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricultural engineering. Work may be chosen pertaining to farm structures, drainage, farm power, concrete construction, or field machinery.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Green.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines.

53. Concrete Construction. Three credit hours. First term. Mr. Green.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil and steam engines, tractors, and windmills.

AGRICULTURAL EXTENSION

Office, 115 Townshend Hall

PROFESSOR RAMSOWER

102. Extension Methods. Two credit hours. Second semester. Two recitations each week. Open only to seniors in the College of Agriculture. Mr. Ramsower.

An introduction to extension methods and a discussion of the forms of organization for carrying on extension work.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT AND HOCKETT, ASSISTANT PROFESSOR BOUCHER, MR. WOOD, MR. WITKE, MR. ROSEBOOM

101-102. History of the United States. (1763-1920). Three credit hours. The year. Mr. Hockett, Mr. Wood, Mr. Wittke.

American History 101 is given also during the second semester, and American History 102 during the first semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1829. The second semester treats the period 1829-1920. Textbook, discussion and collateral readings.

ANATOMY

Office, 105 Biological Hall

PROFESSOR LANDACRE, ASSISTANT PROFESSOR BUCK, MR. KNOUFF,
MR. BAKER

Courses in anatomy, so far as they are open to students in the College of Agriculture, are designed for two classes of students:

(a) Those desiring a general training in vertebrate anatomy should elect courses 101-102 or 103-104. Further electives should be made only after consultation.

(b) Students in Science Nursing and those desiring to specialize in dietetics should select 101 and 116. Course 116 is a study of the human viscera, particularly the digestive system after a preliminary study of one of the higher vertebrates. Course 116 may be taken without 101 when elected by third or fourth year students.

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours each week. Not open to freshmen. Mr. Baker.

Fishes, amphibians and reptiles.

102. Comparative Anatomy of the Vertebrates. Three or five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Elective. Prerequisite, Anatomy 101, or an equivalent. Mr. Baker.

Birds and mammals.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to freshmen. Mr. Landacre.

Karyokinesis and the early development of fishes and amphibians.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to freshmen. Mr. Landacre.

The development of reptiles and birds.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight

laboratory hours each week. Not open to freshmen. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to freshmen. Mr. Landacre.

The histology and early development of the frog.

116. The Digestive System. Three credit hours. Second semester. One lecture and four laboratory hours each week. Elective for third or fourth year students. Prerequisite, one year's work in biological science. Mr. Landacre, Mr. Buck.

A study of the gross and microscopic structure of the digestive system and associated organs in one of the higher mammals and in man.

118. Elementary Comparative Anatomy of Vertebrates. Three to five credit hours. Second semester. One lecture and five to eight laboratory hours each week. Prerequisites, Zoology 101, Physiology 101 or an equivalent. Mr. Landacre, Mr. Knouff, Mr. Baker.

A preliminary study of the comparative anatomy and embryology of the vertebrates accompanied by careful dissection of the shark, frog and cat. This course meets the premedical requirements in anatomy.

ANIMAL HUSBANDRY

Office, Judging Pavilion

PROFESSORS PLUMB, KAYS, JACOBY, AND COFFEY, ASSISTANT PROFESSOR CONKLIN, AND DEPARTMENT ASSISTANTS

135. Elementary Live Stock Judging. Four credit hours. Either semester. Second year. Two lectures and four laboratory hours each week. Mr. Coffey.

Students intending to give much attention to animal husbandry courses should take this course the first semester. Students taking but one course in animal husbandry are required to take this.

An elementary study of the relationship of form to function in horses, cattle, sheep and swine.

137. Principles of Feeding. Three credit hours. Either semester. Second year. Prerequisite, Animal Husbandry 135 and Agricultural Chemistry.

An elementary study of digestion and assimilation, feeding standards, composition of feeding stuffs and feeding practices.

139. Horse Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Kays.

A general consideration of the breeds, breeding, feeding and management of horses.

141. Beef Cattle Production and Management. Three credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of beef cattle.

143. Swine Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Coffey.

A general consideration of the breeds, breeding, feeding and management of swine.

145. Dairy Cattle Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Conklin.

A general consideration of the breeds, breeding, feeding and management of dairy cattle.

147. Sheep Production and Management. Three credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Plumb.

A general consideration of the breeds, breeding, feeding and management of fine-wool and mutton sheep.

151. Advanced Live Stock Judging. Three credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 139, 141, 143 and 147. Mr. Kays.

An advanced class for senior students who have had the more elemental instruction in judging. The purpose is to give a more detailed consideration to type and breed conformation, with emphasis on practice in groups and classes.

153. Meats and Meat Products. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 141, 147, 143. Permission of the instructor must be obtained. Enrollment is limited to fifteen. Mr. Conklin.

A study of the composition and value of meats; the slaughtering of farm animals and the methods of handling and preparing meats and the by-products of slaughter.

155. Live Stock Markets and Marketing. Three credit hours. First semester. Prerequisites, Animal Husbandry 135 and 137. Mr. Plumb.

The live stock markets, their organization methods and rules; methods of shipment and sale, etc. Considerable library work and investigation is required, and the course is handled after the manner of the seminary.

157. Breeding Farm Animals. Four credit hours. Second semester. Lectures and one laboratory period. Prerequisites, Zoology 101, 102 and 115, and Animal Husbandry 135. Mr. Kays.

Advanced work in heredity, variation, etc., in its application to domestic animals. Special attention will be given to practices associated with breeding farm animals.

163-164. Research and Thesis. Two to five credit hours. The year. For fourth year students only, or graduates specializing in Animal Husbandry. Mr. Plumb, Mr. Kays, Mr. Coffey.

Students will elect work in desired subjects after conference with the instructor in charge.

Students desiring work in Animal Nutrition, see Agricultural Chemistry 111-112.

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three ex-

cursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern states, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to visit the poultry plant morning, noon and afternoon, to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Animal Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For veterinary students only. Lectures and recitations upon types and breeds of livestock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Kays.

Textbook and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Conklin.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Permission of the instructor must be obtained. Enrollment is limited to twenty. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep and swine will be given consideration.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

ARCHITECTURE

Office, 105 Brown Hall

PROFESSORS BRADFORD, CHUBB, AND SMITH, ASSISTANT
PROFESSOR RONAN, MR. HASKETT

131. Elements of Architecture. Two credit hours. First semester. Prerequisite, Art 131 and Engineering Drawing 125.

132. Elements of Architecture. Two credit hours. Second semester. Prerequisite, Architecture 131.

133. History of Architecture. Three credit hours. First semester. Prerequisite, Architecture 132.

136. History of Architecture. Three credit hours. Second semester. Prerequisite, Architecture 133.
History of modern architecture.

111. Photography. Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. Principles of Architectural Composition. Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 203 Hayes Hall

PROFESSOR KELLEY, ASSISTANT PROFESSOR ROBINSON, MR. NORRIS,
MR. WEBBER, MISS KNAUBER, MRS. BRAUN

131-132. Elementary Drawing. Two credit hours. The year. Four laboratory hours each week. All instructors.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

Art 131 is given also during the second semester.

Art 132 is given also during the first semester.

133. Advanced Drawing. Two credit hours. Either semester. Prerequisite, Art 131-132. Four laboratory hours each week.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

147. Pen Drawing. Two credit hours. First semester. Two two-hour periods. Prerequisite, Art 132. Mr. Norris.

Drawing for reproduction with special reference to architectural and scientific drawing.

136. Water Color Painting. Two credit hours. Either semester. Prerequisites, Art 133 and 141. Four laboratory hours each week.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

137. Advanced Water Color. Three credit hours. Second semester. Prerequisite, Art 136.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119. All instructors.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. Mr. Kelley.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131 and 141. Miss Knauber.

Art in design; the direct application of design principles and color harmony to dress.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

**PROFESSORS MORREY AND STARIN, MRS MASTERS, MR. OCKERBLAD,
MR. WATSON, AND DEPARTMENT ASSISTANTS**

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in bacteriology are open to advanced undergraduate and graduate students only, not to freshmen or sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mrs. Masters, and department assistants.

This course is a prerequisite to all the elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationship of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical bio-chemical actions.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mrs. Masters.

A study of the more important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation; also, in the lectures, ways of transmission and methods of protection against infectious disease; sanitation and the theories of immunity.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110 or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisite, Bacteriology 107 and 112 or equivalents. Mr. Morrey.

FOR GRADUATES

201-202. Research in Pathogenic Bacteriology.

203-204. Research in Agricultural Bacteriology.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLIOGRAPHY

Office, The Library

MISS JONES, MR. REEDER

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogues and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS TRANSEAU AND SCHAFFNER, ASSISTANT PROFESSORS
GRIGGS, STOVER, AND SAMPSON, MISS DETMERS, MR.
WALLER, AND DEPARTMENT ASSISTANTS

101-102. General Botany. Three credit hours. The year. Two recitations and two laboratory hours each week. Mr. Griggs, Mr. Stover, Mr. Sampson, Miss Detmers, Mr. Waller.

A study of structure, growth, nutritive processes and water relations of the vegetative body of plants, and the relation of plants to their environments,—the first semester.

A study of the reproduction, heredity, and evolution of plants; the nutrition and reproduction of bacteria and fungi in relation to plant diseases and sanitation; a brief survey of the great plant groups, and the classification of some of the common plants of Ohio, during the second semester.

***107. Plant Histology.** Three credit hours. First semester. One lecture and four laboratory hours. Prerequisite, Botany 101-102. Miss Detmers.

An introduction to the technique of microscopic preparations, and the structure and development of the tissue systems of vascular plants.

***108. Ecological Anatomy.** Three credit hours. Second semester. One lecture and four laboratory hours. Prerequisite, Botany 101-102. Miss Detmers.

A study of plant structures in relation to environmental factors.

116. Plant Pathology. Three credit hours. Second semester. One lecture and four laboratory hours. Prerequisite, Botany 101-102.

Representative bacterial and fungus diseases of the principal agricultural crops are studied in the laboratory. In the lectures, consideration is given to the nature, symptoms, and control of plant diseases and the classification and life-histories of causal organisms.

119-120. Local Flora. Three credit hours. The year. Six laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

Field and laboratory study of the local flora. Practice in the identification of plants belonging to all of the great groups. Either course may be elected separately.

123. Morphology of Lower Plants. Four credit hours. First semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of algae, fungi, and bryophytes.

*Not given in 1920-1921.

124. Morphology of Vascular Plants. Four credit hours. Second semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Griggs.

A study of the evolution and life histories of the more important groups of ferns and seed plants.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses are not open to freshmen and sophomores.

117-118. Plant Ecology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Transeau.

The ecological relations of the forests, prairies and deserts of North America. Field work on the local plant associations.

121. Plant Genetics. Three credit hours. First semester. One lecture, two laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the principles and methods of plant genetics are considered, including a study of fertilization and reproduction, hybridization, heredity, Mendelian laws, fluctuations and mutations.

127-128. Plant Pathology. Four credit hours. The year. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Stover.

The course includes a study of the nature, symptoms, classification and course of plant diseases, their relations to environmental conditions; the diseases of particular crop plants and the methods of control; the classification and life histories of parasitic plants.

In the laboratory attention is given to the preparation of culture media, the isolation and culture of plant pathogens, the inoculation of plants followed by a study of the progress of

the disease, and the preparation and use of preventive materials. A number of plant diseases are studied both in the laboratory and the field.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisite, Botany 101-102 and one additional year of some biological subject. Mr. Transeau, Mr. Schaffner, Mr. Griggs, Mr. Stover, Mr. Sampson, Miss Detmers, Mr. Waller.

139-140. Advanced Plant Pathology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 127-128. Mr. Stover.

151-152. Plant Micro-Chemistry. Three credit hours. The year. One lecture and four laboratory hours each week. Elective. Prerequisite, Botany 125-126. Mr. Sampson.

A study of the chemical substances occurring in plant cells and the chemical changes accompanying plant processes and plant responses.

155. Economic Botany. Three credit hours. First semester. Two lectures and two laboratory hours each week. Elective. Prerequisite, Botany 101-102 and one additional year of biological work. Mr. Waller.

Important economic plants of the world studied with reference to their geographic distribution, commercial importance and uses. A summary of the centers of crop production in relation to natural centers of vegetation, environmental, economic and other conditions.

FOR GRADUATES

201-202. Research in Systematic Botany.

203-204. Research in Morphology and Cytology.

205-206. Research in Physiology and Ecology.

207-208. Research in Mycology and Plant Pathology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Hall

PROFESSORS McPHERSON AND W. L. EVANS, ASSISTANT PROFESSORS
BOORD AND DAY, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. First semester. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the non-metals, arranged for students who have not presented chemistry as an entrance requirement. Students taking this course will follow with Chemistry 106, second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 105. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the metals. The laboratory work accompanying is a general introductory course in qualitative analysis.

109. General Chemistry. Four credit hours. First semester. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the non-metals. It is more advanced than Chemistry 105 and is arranged for students who have had an acceptable course in elementary chemistry in a secondary school. Students taking this course will follow with Chemistry 110, second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. Prerequisite, Chemistry 109. Mr. Evans, Mr. Day, and department assistants.

A general course on the chemistry of the metals. It is more advanced than Chemistry 106. The laboratory work is a general course in qualitative analysis.

127. Organic Chemistry. Four credit hours. First semester. Three lectures and one quiz each week. Prerequisite, an acceptable course in general chemistry. Mr. McPherson.

This is a general introductory course in organic chemistry.

151-152. Organic Chemistry. Two credit hours. The year. Prerequisite, Chemistry 109-110, 113-114, 119-120, except by special permission of the instructor. Mr. McPherson.

Lectures in organic chemistry.

153-154. Organic Chemistry. Two or three credit hours. The year. Six or nine laboratory hours each week. Laboratory open afternoons. This course must be accompanied or preceded by Chemistry 151-152. Mr. McPherson, Mr. Boord, Mr. Galloway.

The preparation of typical organic compounds.

CIVIL ENGINEERING

Office, 108 Brown Hall

PROFESSOR ENO, MR. NEILSON

131. Surveying. Five credit hours. First semester. Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Neilson.

133. Sanitation, Drainage, Water Supply. One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSOR STOLTZ, MR. BURKE, MR. KOCHHEISER

101. Principles of Dairying. Four credit hours. Either semester. Prerequisite to all other courses in dairying. Mr. Stoltz.

Lectures will be given on the relation of dairying to general agriculture; the composition of dairy products and the laws governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. Farm Dairying. Four credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Second semester. Prerequisites, Dairying 101 and Bacteriology 107. Mr. Burke.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Four credit hours. Either semester. Prerequisite, Dairying 101. Mr. Kochheiser.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento and camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice Cream Making. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures will be given on the theory and practice of ice cream making. Laboratory work will consist of making ice cream and other frozen products.

111. Dairy Mechanics. One credit hour. First semester. Prerequisite, Dairying 101 and permission of the instructor. Concurrent with Agricultural Engineering 117. Mr. Kochheiser.

Lecture work will be given on the construction and operation of refrigerating machinery, milk bottle fillers and cappers, churns, ice cream freezers, pasteurizers, emulsifiers, power separators, and homogenizers.

It is intended to train the students who are specializing in dairy manufacturing to understand the machinery used in the dairy manufacturing industry.

113-114. Advanced Dairying. Two credit hours. The year. Prerequisite, Dairying 101. Mr. Erf.

Two lines of work are offered in this course. First, Economic Dairying. This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used. Second, Investigational Work. This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

115. Dairy Buildings. Two credit hours. First semester. Prerequisite, Dairying 101. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories and refrigerating plants. Must be followed by Agricultural Engineering 114.

116. Milk Condensing. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

121. Dairy Herd Management. Nine credit hours. Either semester. Prerequisite, Dairying 101-102, and permission of the

instructor. May be scheduled only by men doing Cow Testing Association work. Mr. Erf.

The work of the course includes visiting not less than twenty herds for at least eight consecutive months. During these visits the milk of each cow is weighed and tested for fat and total solids, weighing feeds and calculating the cost, selecting profitable feeds, calculating feed costs, labor costs and determining other items of expense in order to arrive at the profit or loss of each cow in the herd. Suggestions for increased profits and improving the sanitary conditions must be incorporated in a monthly report.

119-120. Proseminary. One credit hour. The year. Prerequisite, Dairying 101.

Seminary on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

FOR GRADUATES

201-202. Advanced Dairying.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz and one laboratory period each week. First year, Three-year Course in Agriculture. Mr. Stoltz.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skimmilk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Burke.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and

manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Buttermaking. Three credit hours. Second term. Mr. Kochheiser.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

(See Engineering Drawing)

ECONOMICS AND SOCIOLOGY

Office, 5 Page Hall

PROFESSORS HAGERTY, HAMMOND, HUNTINGTON, RUGGLES, AND NORTH, ASSISTANT PROFESSORS WALRADT, MARK, AND DICE,
MR. HELD, MR. GETTYS, MR. CLARKE, MISS SHEETS, MR. ECKELBERRY, AND DEPARTMENT ASSISTANTS

ECONOMICS

101-102. Principles of Economics. Three credit hours. The year. Not open to freshmen. Should precede all courses in Economics except 132, 133. Concurrent 139. Mr. Hammond, Mr. Ruggles, Mr. Dice, and instructors.

A study of the laws of production, exchange, distribution and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Textbook, lectures and individual investigation.

Economics 102 is given also during the first semester. Mr. Walradt and instructors.

Economics 101 is given also during the second semester. Mr. Walradt and instructors.

120. **The Household.** Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102 or Economics 101-102. Miss Mark.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

139-140. **Elements of Accounting.** Three credit hours. The year. Two recitations and one two-hour laboratory period each week. Prerequisite, registration in Economics 101-102.

An introduction to practical accounting, including the preparation and interpretation of business statements.

147-148. **Financial History of the United States.** Two credit hours. The year. Prerequisite, Economics 101-102. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans and financial administrations, currency legislation, and the development of banking institutions.

SOCIOLOGY

101-102. **Principles of Sociology.** Three credit hours. The year. Not open to freshmen. Mr. Hagerty, Mr. North, Miss Mark, Mr. Clarke, Mr. Gettys.

A study of the fundamental principles of sociology. Textbook, lectures, collateral reading and individual investigations.

Sociology 101 is given also during the second semester.

Sociology 102 is given also during the first semester.

107. **The Family.** Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman and Medieval periods. The modern family, its functions and its problems.

109. The Handicapped, Defectives and Dependents. Four credit hours. First semester. Prerequisite, Sociology 101-102. Mr. North.

A consideration of the blind, the deaf, the crippled, the insane, the feeble-minded and epileptic, the homeless and detached, the aged and infirm. The causes for the existence of these groups, social provision for their treatment, and modern programs of prevention.

112. Needy Families and Children. Four credit hours. Second semester. Third year, Science Nursing. Prerequisite, Sociology 101-102. Mr. North.

A consideration of the influences tending to break down normal family life and their prevention; public and private relief. The sick poor. Dependent and neglected children. Methods and agencies of treatment. Theory and organization of modern charity.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSOR FRENCH, ASSISTANT PROFESSORS MEIKLEJOHN, WILLIAMS, TURNBULL, AND SVENSEN, MR. FIELD, MR. EAGLE, MR. PAFFENBARGER, AND DEPARTMENT ASSISTANTS

101. Elementary Mechanical Drawing. Two credit hours. Either semester. Mr. French and department assistants.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Engineering Drawing 101. Lettering, orthographic, isometric and oblique projections. Mr. French and department assistants.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Engineering Drawing 125.

125. Mechanical Drawing. Two credit hours. Either semester. College of Agriculture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Engineering Drawing 127.

Engineering Drawing 127 and 128 are required in Home Economics, third year.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, GRAVES AND KETCHAM, ASSISTANT PROFESSORS COOPER, BECK, ANDREWS, AND PERCIVAL, MR. CRAIG, MR. WILEY, MISS DOLLINGER, MISS SNIFFEN, MR. ESPER, MR. BURNET, MISS HARBARGER, MR. SHIVELY, MR. TAIT, MR. FRENCH, MR. McKINNEY, MISS PEGG, AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. Text: Scott and Denney's Paragraph Writing, and Duncan, Beck and Graves's Specimens of Prose Composition. All instructors.

English 101 is given also in the summer session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the summer session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101, 104. Mr. Beck.

The number admitted to this course is limited to thirty. Special permission necessary.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101, 104, 105. Mr. Beck.

The number admitted to this course is limited to thirty. Special permission necessary.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor,

Mr. Graves, Mr. Andrews. Second semester: Mr. Cooper, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant and Poe; of Hawthorne, Emerson, Whittier, Longfellow and Lowell; and of Walt Whitman; with a brief survey of recent literature.

141. Nineteenth Century Poetry. Three credit hours. First semester. No prerequisite course. Mr. Taylor, Mr. Cooper, Mr. Andrews.

Wordsworth, Shelley, Keats, and their contemporaries.

145. Nineteenth Century Prose. Three credit hours. First semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Coleridge, Lamb, Landor, DeQuincy, Hazlitt and Carlyle.

146. Nineteenth Century Prose. Three credit hours. Second semester. No prerequisite course. First year, Science Nursing. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Arnold, Ruskin, Newman, Pater, Stevenson, and in recent and contemporary essayists.

FOR SHORT COURSES ONLY

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition and argumentation.

PUBLIC SPEAKING

101. Public Speaking. Two credit hours. First semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Wiley.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

102. Debating. Two credit hours. Second semester. Prerequisite, English 101 and 104. Mr. Ketcham, Mr. Wiley.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

ENTOMOLOGY

(See Zoology and Entomology)

EUROPEAN HISTORY

Office, 305 University Hall

PROFESSORS SIEBERT, McNEAL, AND PERKINS, ASSISTANT
PROFESSORS WASHBURNE AND KNIPFING

101. Medieval History. Three credit hours. First semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Washburne, Mr. Knipfing.

102. Modern History from 1500 A. D. Three credit hours. Second semester. Mr. Siebert, Mr. McNeal, Mr. Perkins, Mr. Washburne, Mr. Knipfing.

European History 101 is given also during the second semester.

European History 102 is given also during the first semester.

FARM CROPS

Office, 101 Horticulture Building

PROFESSORS PARK AND WILLIAMS (Non-Resident), ASSISTANT
PROFESSOR WILLARD, MR. LUTZ, AND DEPARTMENT
ASSISTANTS

Any one of the courses 101, 109, or 111 may be taken as the course in farm crops required for graduation. Students expecting to specialize in farm crops should omit course 101.

101. Field Crop Production. Four credit hours. Either semester. Three lectures and two laboratory hours each week. Prerequisite, Botany 101-102. Botany 102 may be taken concurrently. Mr. Willard.

A study of the history, adaptation, culture, uses, and distribution of the cereal, forage, and miscellaneous crops. Laboratory study of the principal types and varieties.

Students who have had farm crops in an agricultural high school should not register for this course.

109. Cereal Crops. Four credit hours. First semester. Three lectures and two laboratory hours each week. Prerequisites, Botany 101-102.

A study of the characters, production, uses, and marketing of the principal cereal crops, with emphasis on commercial grading. Lectures, recitations and trips. Laboratory study of types and varieties and practice in market grading.

111. Forage Crops. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Willard.

Lectures and recitations on the characters, uses and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification of forage crops and in seed identification.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

112. Special Crops. Two credit hours. Second semester. Prerequisite, Farm Crops 101, 109, or 111.

Occasional lectures, mostly individually assigned readings on special crops not emphasized in other courses. Reports presented to the class.

113. Plant Breeding. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisite, Farm Crops 101, 109, or 111, and Zoology 115. Mr. Park.

The application of genetic principles to the improvement of cultivated plants and study of special topics in plant genetics. The technique of breeding certain typical crops.

***123. Crop Ecology.** Two credit hours. First semester. Two lectures each week. Prerequisite, Farm Crops 101, 109, or 111. Mr. Willard.

The relations of our economic plants to their environment. A study of fundamental factors in crop production, and their relation to growth and yield. Investigation of special problems, lectures, reports and assigned readings.

119-120. Minor Investigations. Two to four credit hours. The year. Prerequisite, two other courses in the department and permission of the instructor. Mr. Park, Mr. Willard.

FOR GRADUATES

201-202. Research in Plant Breeding and Crop Production.

203-204. Seminary in Farm Crops.

For description of graduate work in this department see the Bulletin of the Graduate School.

* Not given in 1920-1921.

FOR SHORT COURSES ONLY

51-52. Crop Production. Four credit hours. The year.

The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

FRENCH

(See Romance Languages and Literatures)

GEOLOGY

Office, 104 Orton Hall

PROFESSORS BOWNOCKER AND CARMAN, ASSISTANT PROFESSORS
HILLS AND TUCKER, MISS MORNINGSTAR, MR. LAMBORN

103. Physical Geology. Three credit hours. First semester. Mr. Bownocker.

Introductory course. Petrographical, structural, and dynamical geology. Study of common minerals and rocks and geological maps. The course is illustrated with lantern views, models and museum materials.

104. Historical Geology. Three credit hours. Second semester. Recitations, lectures, laboratory, and field trips. Prerequisite, Geology 151. Mr. Carman.

A study of the geological history of North America, its physical history, life development and structure. The course deals with the classification and distribution of the geological formations, especially those of Ohio, and with the characteristic fossils of each system. During the second half of the semester there will be several field trips on Saturdays.

151. Geology. Three credit hours. Either semester. Two recitations or lectures and one two-hour laboratory period each week. Agriculture, first year. Mr. Lamborn, Miss Morningstar.

Physical and economic geology. The principles of geology will be presented in the light of their practical bearing upon agriculture. The common rock-forming minerals and rocks and geologic maps are studied in the laboratory; while in the field various illustrations of geological processes are studied.

121. Introduction to Geography. Three credit hours. First semester. Lectures, assigned reading and laboratory. Prerequisites, Geology 101-102 or 103-104. Mr. Tucker.

The fundamental principles of geography. An introductory study of the relations of the lithosphere, hydrosphere, and atmosphere to life, especially to the life of man.

124. Physical and Regional Geography of Europe. Three credit hours. Second semester. Lectures, assigned reading and laboratory. Prerequisite, Geology 121. Mr. Tucker.

Europe in its relation to the rest of the world. Its physical features, climate and natural resources and their relation to the life and development of the European people. Offered in 1920-1921.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Stratigraphic Geology of Ohio. Three credit hours. First semester. Prerequisite, Geology 151 and 104. Mr. Carman.

Field trips, laboratory work, lectures, and assigned readings. Field trips on Saturdays (entire day) while the weather permits.

The geological formations of central Ohio are studied in the field and those formations more distant from Columbus are studied by rock specimens and assigned readings. This course is intended to acquaint the student with the ordinary methods of field investigations, such as the measurement and description of geological sections, the making of geological maps, the collection and identification of specimens, and the preparation of reports describing the regions studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 151 and 104. Mr. Hills.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Three credit hours. The year. Recitations, lectures, and laboratory. Prerequisite, Geology 151 and 104. Mr. Carman, Miss Morningstar.

A study of the systematic classification of the animal kingdom as a means of becoming acquainted with the faunas that characterize the various geological formations. The course deals mainly with the generic and specific characters of the fossil invertebrates and their use in identifying and correlating geological formations.

167. Economic Geology. Three credit hours. First semester. Prerequisite, Geology 151. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence and origin. The coals of the Appalachian field.

GERMAN

Office, 317 University Hall

PROFESSORS M. B. EVANS AND EISENLOHR, ASSISTANT PROFESSORS THOMAS AND BARROWS, MR. KOTZ

101-102. Elementary German. Four credit hours. The year. All instructors.

German 102 is given also during the first semester.

German 101 is given also during the second semester.

103. Intermediate German. Four credit hours. Either semester. Prerequisite, German 101-102 or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose; grammar review; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Either semester. Prerequisite, German 103 or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units in German.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, Advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 100 Hayes Hall

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year. Prerequisite, Psychology 101-102. Mr. Anderson.

Text: Graves's A History of Education (three volumes) and Graves's Great Educators of Three Centuries.

HOME ECONOMICS

Office, 120 Home Economics Building

PROFESSORS WHITE AND VAN METER, ASSISTANT PROFESSORS HATHAWAY, WALKER, AND ADAMS, MISS SKINNER, MISS LINDER, MISS HAMBLIN, MISS BAINES, MISS DONNELLY, MISS McGUIRE, AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Two lectures, one quiz, and two laboratory periods each week. Prerequisite, Chemistry 106 or 110.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost and value of the nutrients in the various food materials.

104. Sanitation. Three credit hours. Either semester. Three lectures each week. Prerequisite or concurrent, Bacteriology 107. Miss Linder.

A study of the interdependence of home and public agencies in securing and promoting sanitary and hygienic measures; location and construction of the house, water supply, plumbing, heating, ventilation, lighting, and home nursing.

111-112. Textiles. Two credit hours. The year. One lecture and one laboratory period each week. Prerequisite or concurrent, Art 119. Mrs. Walker.

The study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent. Miss Hathaway.

A study of the relation of economics, hygiene, and art to clothing. The drafting and designing of patterns, the selection of materials, and garment construction.

116. Dress. Three credit hours. Second semester. One lecture and two laboratory periods each week. Miss Hathaway.

Continuation and amplification of Home Economics 113. Outline of history of costume and continuation of the study of selection and combination of materials in their application to dress.

The lecture may be taken as a one-hour course without the laboratory.

118. The House. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Art 131, Home Economics 112. Home Economics 104, Economics 101, Art 141, either prerequisite or concurrent. Miss Donnelly.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. Household Management. Four credit hours. Either semester. Three lectures each week. Continuation of 118. Prerequisites, Economics 102, Art 141, Home Economics 102, 118, 104 or 110. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

The Home Economics practice apartment where the students live in groups for a period of time, affords opportunity for practice in household management.

121. Food Problems. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisites, Chemistry 106 or 110, Home Economics 101-102, and consent of instructor. Miss Skinner.

Problems of markets, fuels, equipment and labor involved in selection, purchase, preparation and serving of food.

127. Special Methods. Three credit hours. First semester. Prerequisites, Home Economics 101, 102, 111, 112, and Psychology 101. Miss Van Meter, Miss Hathaway, Mrs. Adams.

This course is designed for students intending to teach home economics. Survey of home economics, examination of courses of study, planning of lessons, study of various types of schools and methods for teaching the special phases of home economics work. Observations of such schools in operation. Three lecture hours each week, and observation trips as required.

128. Practice Teaching in Home Economics. Three credit hours. Second semester. Prerequisite, Home Economics 127. One lecture and a minimum of thirty class exercises in practice teaching during the semester. Mrs. Adams, Miss Kauffman, Miss Gromme.

Observation work, arranging courses of lessons, practice teaching.

125-126. Survey of Home Economics. Three credit hours. The year. One lecture and two laboratory periods each week.

Required in curriculum for Public Health Nurses and elective for certain irregular students by consent of instructor. Miss White.

Principles of the selection and preparation of normal low cost dietaries, marketing, feeding of infants, house sanitation, household management, economic and hygienic aspects of textiles and clothing.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Proseminary. Two credit hours. Either semester. One lecture each week. Prerequisite, eighteen hours of required home economics work. Miss Van Meter.

Readings and reports on home economic topics. Problems assigned for individual research.

106. Proseminary. Two to five credit hours. Second semester. One lecture each week. Continuation of Home Economics 105. Prerequisite, Home Economics 105, and consent of the instructor. Miss Van Meter.

Special research continued. Reports and conferences.

110. Dietetics. Four credit hours. Either semester. Two lectures and two laboratory periods each week. Prerequisite, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124. Miss Skinner.

A study of the chemical, physiological and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Translation of standard dietaries into food materials and some exercises in making dietary studies and in preparing food for the sick.

113. Abnormal Dietetics. Four credit hours. First semester. Two lectures and two laboratory periods each week. Prerequisites, Home Economics 110, Anatomy 116, and consent of the instructor.

A continuation of Dietetics 110, treating in detail the adaptation of diet to diseases of nutrition.

FOR GRADUATES

201-202. Research in Home Economics.

For description of graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture Building

PROFESSORS PADDOCK AND MONTGOMERY, ASSISTANT PROFESSORS SCHERER, ELWOOD, AND HOTTES, MR. CHARLES, AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Three lectures and two laboratory hours each week. Required as a prerequisite for all horticultural courses except 118 and courses numerically listed between 151 and 172. Required of all students specializing in horticulture. Credit cannot be received for this course if the student has already passed Horticulture 118. No prerequisite.

A study of plant growth with special reference to orchard, garden, greenhouse and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all students majoring in Horticulture. Credit cannot be given for this course if Horticulture 118 has been passed. Prerequisite, Horticulture 101.

History, botany, geography, site and soil for plantation, planting, cultural practices, harvesting, marketing and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 101, 120. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography, site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106 or equivalent. Mr. Hottes.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisite, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticised and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Either semester. Three lectures and two laboratory hours each week. Required of all agricultural students. Not open to students who have credit for Horticulture 101 or 120. Mr. Paddock, Mr. Montgomery.

A study of the principles and practices of vegetable gardening, and of fruit growing adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisite, Horticulture 105, 106.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading, and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101 and 120. Mr. Montgomery.

A study of the history and development of vegetable gardening, the extent and geography of the industry, and the general principles involved in the production and utilization of vegetable crops.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the state is a part of the required work.

133. Horticultural Products. Three credit hours. First semester. One lecture and four laboratory hours each week. Prerequisites, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods applicable to the preservation of gardening and orchard products. The theory and art of canning, pickling and preserving. The manufacture of cider, vinegar, apple butter, grape juice and other products is considered from the commercial standpoint.

FLORICULTURE

140. Amateur Floriculture. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Open to all students, excepting those in floriculture. Mr. Hottes.

A course designed for students of home economics, general agriculture and horticulture who desire to become familiar with the culture of flowers about the home, including roses and the most commonly grown perennials and annuals. A one day excursion to a nearby city will be required.

No credit will be given for this course if other courses in floriculture have been taken.

141-142. Commercial Floriculture. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101, 132. Mr. Hottes.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing and storing. Laboratory work in the care of greenhouses and crops.

143. The Flower Shop. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations and house decorations, together with the establishment and management of a flower shop.

144. Conservatory and Bedding Plants. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The culture, care and use of tropical and sub-tropical plants for decorative work in the conservatory, and the art of outdoor bedding. The class will participate in a day excursion.

145-146. Garden Flowers. Three credit hours. The year. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The general subject of gardening, especially rose, water and rock gardens with attention given to the propagation and growth of garden annual and perennial flowers as adapted to the florist's trade.

147-148. Systematic Floriculture. Three credit hours. The year. Two lectures and two laboratory hours each week. Mr. Hottes.

A study of the origin, history and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

150. Elementary Landscape Design. Three credit hours. Second semester. One lecture and two laboratory periods each week. Required in the second semester, second year of the curriculum in Landscape Architecture.

An elementary study of the principles of landscape design.

151-152. Plant Materials. Two credit hours. The year. Landscape Architecture, second year. Prerequisite, Botany 101-102. One lecture and two laboratory hours each week.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Open to any student. Recommended for third year students in Floriculture.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens and parks.

157-158. Landscape Design. Three credit hours. The year. One lecture and four laboratory hours each week. Landscape Architecture, third year. Prerequisite, Horticulture 154.

This course takes up the general study of practical problems in design, a study of the important works of landscape architecture and the making of finished plans, reports and working-drawings for estates, gardens and parks.

159-160. Advanced Landscape Design. Three credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 157-158.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week.

Landscape Architecture, third year. Prerequisite, Civil Engineering 131.

A study of the methods adopted in compiling surveys, especially for landscape use; field practice with instruments.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers in detail a study of the various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

173-174. Civic Design. Three credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the treatment of public squares, street intersections, parks and playgrounds.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective.

172. Proseminary in Landscape. One credit hour. Second semester. Open to fourth year and graduate students.

Discussion of reports from practical landscape problems.

FARM WOODLAND

180. Farm Woodlot. Four credit hours. Either semester. Three lectures with occasional recitations and one three-hour laboratory period each week. Elective. Mr. Scherer.

It is the purpose of this course to show the significance of the forest and its place in farm management, the growth of trees and their identification; the methods of handling woodlands, both natural and artificial; the protection of the forest; the measuring and scaling of trees and logs; the utilization of products and by-products; the preservation of farm timbers, and the influences of the forest.

181-182. Arboriculture and Ornamental Planting. Three credit hours. The year. Two lectures and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will deal with the selection of ornamental trees; the transplanting of large trees; the pruning and shaping of trees; and the care of diseased and injured trees.

This course is especially adapted for students in landscape architecture, agriculture and horticulture.

183. Lumber. Three credit hours. First semester. Two lectures and one three-hour period of laboratory or field work. Elective. Mr. Scherer.

A study of the methods and means of distinguishing woods, both growing and sawed; the cutting and sawing of lumber; grading and seasoning; diseases and the methods of preserving lumber, etc.

This course is especially adapted to the needs of students in manual training, architecture and engineering.

184. Principles of Forestry. Three credit hours. Second semester. Three lectures with occasional recitations. Elective. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry; the problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it,—all serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary for tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Adapted to students of other departments.

FOR GRADUATES

201-202. Research Work.

For description of graduate course in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Pad-dock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Pad-dock.

A continuation of Horticulture 57.

59. **Pomology.** Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. **Landscape Gardening.** Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

65. **Floriculture.** Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. **Floriculture.** Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. **Farm Woodlot.** Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes, such as wind-breaks, hedges, shade and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

INDUSTRIAL ARTS

(See Shopwork)

INDUSTRIAL EDUCATION

Office, 212 Shops Building

PROFESSOR USRY, MR. SMITH

129. Cabinet Making. Three credit hours. Either semester. Prerequisite, Industrial Education 125 or Shopwork 101.

135. Craftwork for Women. Two credit hours. Either semester.

This course is primarily designed for women in home economics. Lectures and laboratory work dealing with the materials that enter into the construction of the home and its furniture, the finishing of these materials and the care of the finish, together with opportunity for selection of problems for making and finishing.

136. Craftwork for Women. Two credit hours. Either semester. Prerequisite, Industrial Education 135.

An advanced course following 135. Particular attention paid to the craftwork feature.

137. Methods Related to Agricultural Industry. Two credit hours. Second semester. Prerequisite, Shopwork 101 and 103, or equivalent.

A course in industrial education methods specifically related to the agricultural community.

138. Correlated Industrial Work. Two credit hours. Either semester.

For students in agricultural education (Smith-Hughes), designed to give experience and practice in the type of industrial work that meets the need of repairs and construction on the farm.

JOURNALISM

Office, 225 Shops Building

PROFESSORS MYERS AND HOOPER

101-102. News-collecting and News-writing. Three credit hours. The year. Two lectures and three laboratory hours each week. Mr. Myers.

Attention is given to vocabulary and style in the gathering and writing of news for publication in the University daily newspaper, which is organized and operated as nearly like a city newspaper as possible.

Journalism 101 is given also during the second semester.

Journalism 102 is given also during the first semester.

For other courses in this department see the Bulletin of the College of Commerce and Journalism.

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND RASOR, ASSOCIATE PROFESSOR
ARNOLD

107. Mathematics for Students of Agriculture. Three credit hours. Either semester. Mr. Bohannan, Mr. Rasor, Mr. Arnold.

The elements of trigonometry and curve-plotting, numerical computation and algebraic processes germane to agriculture.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Text-book: Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, The Barracks

CAPTAINS LEONARD, PARKER, WRIGHT, MURRAY, AND BENNER,
U. S. A., LIEUTENANT KAUFFMAN, U. S. A., AND
DEPARTMENT ASSISTANTS

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees therefore requires all male students, both special and regular, unless excused by the Military and Gymnasium Board, to drill during two years.

The Reserve Officers' Training Corps was established under the Defense Act of June 3rd, 1916, the required two years' work being included in its four-year course. Instruction is given in Infantry and Field Artillery. Under ordinary circumstances this work is under six commissioned officers of the regular army, detailed for the purpose.

EITHER 101-102 OR 105-106 ARE REQUIRED OF ALL FIRST YEAR STUDENTS

101-102. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. An elementary course including infantry drill, close and extended order, battle formations, formations for protection in hostile countries, etc., practice with gallery rifles at any open hour, daily during the winter months. Lecture, one hour each week, by the President.

*Not given in 1920-1921.

105-106. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Field artillery drill, administration, ordnance and materiel. Lecture, one hour each week, by the President.

EITHER 103-104 OR 107-108 ARE REQUIRED OF ALL SECOND YEAR STUDENTS

103-104. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. A continuation of 101-102, with additional instruction in pistol practice, the bayonet and hand grenades.

107-108. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Artillery, motors, topography, and reconnaissance.

125-126. Advanced Military Science. For Infantry. Two credit hours. The year. Prerequisite, 101-102, 103-104, or equivalent. Five hours each week. Two hours are allotted to training as instructors in courses 101-102 or 103-104. Class room work three hours each week in advanced minor tactics, map problems, liaison, topography, field engineering, military law, technique of automatic rifles, machine guns and infantry cannon.

135-136. Advanced Military Science. For Field Artillery. Two credit hours. The year. Prerequisite, 105-106, 107-108, or equivalent. Five hours each week. Class room work three hours each week in field artillery, communication, gunnery, conduct of fire, tactics, care and training of horses. Practical work in horsemanship and training as instructors, two hours each week.

127-128. Advanced Military Science. For Infantry. Two credit hours. The year. Prerequisite, 125-126 or equivalent. Five hours each week. Two hours allotted to training as instructors in courses 101-102 or 103-104. Class room work three hours each week in topography, military policy of the United States, and advanced work in subjects under 125-126.

137-138. Advanced Military Science. For Field Artillery. Two credit hours. The Year. Prerequisite, 135-136 or equivalent. Five hours each week. Class room work three hours each week

in minor tactics and map maneuvers, military policy of the United States, military history, military law, care and training of horses. Practical work in horsemanship and practice as instructors, two hours each week.

SUMMER CAMPS

As a part of the instruction of the Reserve Officers' Training Corps at the University, summer camps are conducted for this district. Infantry, at Camp Custer, five miles from Battle Creek, Michigan; Field Artillery, at Camp Knox, Kentucky, thirty-one miles from Louisville. One summer camp for the students of the first two years is held between the first and second school years. This camp is voluntary.

The camp for the advanced course is held between the third and fourth years, and is required. For special reasons the advanced course camp may be postponed until after the fourth year is completed.

These camps are of six weeks' duration and the work is mostly practical. In addition to military work, field sports and competitions are conducted. The training for Infantry includes firing on the target range with service rifles and using ball ammunition in combat. The training for Field Artillery includes firing field guns with service ammunition. The development of leadership and discipline are primary subjects of these camps.

The Government furnishes transportation to and from the camps. While in camp, clothing, subsistence, medical attention and entertainment are provided.

PHYSICAL EDUCATION

Office, The Gymnasium

PROFESSORS ST. JOHN, WILCE, CASTLEMAN, AND NICHOLS, ASSISTANT PROFESSOR TRAUTMAN, MR. OHLSON

MEN

101-102. Physical Education. One credit hour. The year. Two hours each week. Required of all freshmen in this college. During the first semester the course consists of one lecture on personal hygiene and one period of active physical exercise each week.

Personal Hygiene: Lectures and quizzes on the cause, prevention and hygienic treatment of the common preventable diseases and conditions which lower the vitality and interfere with the health and efficiency of the student.

Physical Exercise in Class: A graded course of free-hand exercises, with light hand apparatus for the relief and correction of slight bodily defects, improper carriage, etc.; graded, progressive exercises to promote muscular tone, organic vigor, bodily skill; class dancing, gymnastic and athletic games and contests.

WOMEN

ASSISTANT PROFESSOR MEYER, MISS SCOFIELD, MISS RANCK

131-132. Physical Education. One credit hour. Four hours each week. Required of all women students during the first year of attendance at the University.

Lectures on personal hygiene.

Gymnasium Exercises: Elementary Swedish gymnastics, calisthenics, drills with wands, Indian clubs, etc., folk dancing, technique of esthetic dancing, and gymnastic games.

Recreative games and sports.

133-134. Physical Education. One credit hour. Four hours each week. Required of all women students. For second year students. Lectures on principles of physical education.

Gymnasium exercises.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE, EARHART, AND BLAKE, ASSISTANT PROFESSOR HEIL, MR. DITTO, MR. SERVICE

103-104. General Physics. Four credit hours. The year. Recitations, lectures and laboratory. A non-mathematical course for students who have no entrance credit in physics. Mr. Ditto, Mr. Service.

105-106. General Physics. Four credit hours. The year. Three recitations and one three-hour laboratory period. Pre-requisite, entrance credit in physics. Mr. Earhart, Mr. Blake.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture.

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY

Office, 104 Biological Hall

PROFESSORS BROOKS AND BLEILE, ASSISTANT PROFESSORS SEYMOUR AND McPEEK, MR. DURRANT, AND DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including demonstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

106. Chemical Physiology. Four credit hours. Second semester. Mr. Bleile, Mr. Seymour, Mr. Durrant.

A laboratory course including lectures and recitations on the physiology of the body fluids, foods, digestion, absorption, excretion and metabolism.

137-138. Physiology Laboratory. One credit hour. The year. Must be accompanied by Physiology 101-102, which course it is intended to supplement by experimental work. One laboratory period of two hours each week. Mr. Durrant.

PSYCHOLOGY

Office, 403 University Hall

PROFESSORS ARPS, PINTNER, AND WEISS, ASSISTANT PROFESSORS BRIDGES AND CRANE, MR. CULLER, MISS COY, MISS ROGERS, MR. BURTT, MISS HATCH, AND DEPARTMENT ASSISTANTS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. All instructors.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

PUBLIC HEALTH AND SANITATION

PROFESSORS HAYHURST AND McCAMPBELL

106. Public Health Nursing. Two credit hours. Second semester. Two lectures or recitations each week. Total 64 hours.

This course takes up the historical development of nursing, the organization of the professional field, and the place of nursing in its relation to the various forms of medico-social and public service. It discusses the best methods of administration as to the supervision and arrangement of practical work, classification and preservation of records and the presentation and publication of reports. This course is intended also to give a general grasp of the problems in nursing to be met in families where there is sickness with poverty; the measures to be followed in various types of families, to preserve unity, to relieve immediate needs and to teach hygiene, preventive methods and the handling in the home of acute, chronic or contagious illness. The special problems of nursing in medico-social service, industrial welfare and rural districts are considered.

110. Preventive Medicine. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Mr. McCampbell.

The important facts and fundamental principles in preventive medicine are given consideration. The sociological aspects and the methods used in public health work are emphasized. Special attention will be given to the methods and procedures for preventing the occurrence of the communicable diseases as well as the control of this group of diseases. The non-infectious diseases will also be discussed from the standpoint of preventive medicine and the public health.

121. Public Health Problems. Two credit hours. Either semester. Two lectures or recitations each week. Given only on the campus. Mr. McCampbell, Mr. Hayhurst.

This course includes an elementary consideration of the various public health problems which present themselves. Consideration is given the question of the prevention of unnecessary infant mortality, the physical supervision of school children, the provision and the protection of the public water and

food supplies, the proper elimination of wastes, the sociological aspects of public health work, including especially the question of the elimination of tuberculosis. Limited instruction is given on the matter of quarantine regulation, disinfection, and in the control of communicable diseases.

SCIENCE NURSING

101. Elementary Nursing. Three credit hours. Summer term following second year of Science Nursing Curriculum. Three lectures each week. Total 36 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Personal hygiene; charts and charting; reception of patients; preparation of patients' rooms; the care and use of equipment; the care, use and preparation of instruments; the care and handling of patients; bandaging and massage.

102. History and Ethics of Nursing. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

Definition; professional ethics; hospital ethics and etiquette; the school uniform; the social life of the student; required reading; the spirit of nursing; and a brief history of nursing.

103. Drugs and Solutions. One credit hour. Summer term following second year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first two years of Science Nursing Curriculum.

Elementary discussion of drugs, their sources, crude forms, and preparation; practical problems in weights and measures; and the preparation of solutions.

104. Hospital Ward Duty. Seven credit hours. Summer term following second year of Science Nursing Curriculum. Seven hours of hospital ward duty each day for six days each week. Total 504 hours. Prerequisite, first two years of Science Nursing Curriculum or its equivalent.

The student will serve as a probationer in the wards of the Protestant Hospital.

111. Elements of Pathology. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year,

Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

A lecture course covering the elementary principles; retrogressive, inflammatory and regenerative reactions of the tissues and the effects of special infectious agents upon the body; tumors.

113. Medical Nursing. Two credit hours. First semester. Two lectures each week. Total 32 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Hygiene of the sick-room, diseases of the blood, of organs of circulation and lymphatics, of organs of respiration, of digestion and of excretion.

115. Surgical Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years of Science Nursing Curriculum and preliminary nursing period.

Principles of septic and anti-septic surgery; fractures; surgical emergencies; pre-operative considerations; post-operative considerations; surgical tuberculosis; tumors; surgical conditions of the head, neck, chest, stomach, gall bladder, intestines, kidney and bladder, and fistulae and plastic surgery.

117. Materia Medica. One credit hour. First semester. One lecture each week. Total 16 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Drugs, systems of measurement, the care and use of equipment, administration, solutions; important drugs; the medicine closet.

119. Hospital Ward Duty. Ten credit hours. First semester. Seven hours each day; six days each week. Total 672 hours. Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of Science Nursing Curriculum.

A student performs the duties of a nurse in training in the wards of the Protestant Hospital.

122. Proseminary in Case Studies. Two credit hours. Second semester. Two conferences each week. Total 32 hours.

Third year, Science Nursing. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Assignment to each student of at least six cases embracing medical, surgical, obstetrical, and pediatrial nursing for complete study and the submission of written reports as the basis for class discussion.

123. Hospital Ward Duty. Eight credit hours. Summer term following the third year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first three years of Science Nursing Curriculum.

The student performs the duties of a nurse in training in the wards of the Protestant Hospital.

125. Gynecological Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition and brief history of gynecology; diseases of reproductive organs; of the genito-urinary tract; examinations and gynecological operations.

127. Orthopedic Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Definition; deformities; apparatus used in orthopedic work; care of patients in plaster casts and braces; orthopedic operations.

129. Obstetrical Nursing. Two credit hours. First semester. One lecture and one demonstration each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Mechanism and management of normal labor; after-care of the mother; care and artificial feeding of the new-born infant; physiology and hygiene of pregnancy; pathological pregnancy.

131. Nursing in Diseases of Infants and Children. Two credit hours. First semester. Two lectures each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The normal child; nursing of sick children; diseases of digestive, respiratory, circulatory, nervous and genito-urinary systems; diseases of the blood and lymphatic glands; surgical conditions in children; social aspects of children's diseases.

133. Nursing in Communicable Diseases. Two credit hours. First semester. Two lectures each week. Total 32 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Specific infectious diseases; the conduct of a case of communicable disease; diphtheria, cerebrospinal meningitis, acute poliomyelitis, lobar pneumonia, influenza, common colds, follicular tonsillitis, tuberculosis, scarlet fever, measles, chicken pox, whooping cough, mumps, gonococco-vaginitis, syphilis, gonorrhea, erysipelas, smallpox and typhoid fever.

135. Nursing in Diseases of the Eye, Ear, Nose and Throat. One credit hour. First semester. One lecture each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

Anatomy and physiology of the head with special reference to the eye, ear, nose and throat; special diseases; methods of examination; methods of treatment; operations; solutions, strength and uses.

137. Operating Room Technic. One credit hour. First semester. One lecture or demonstration each week. Total 16 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The operating room; instruments and supplies; preparation for operation; local preparation of patient for operation; and preparation and duties of the nurse.

139. Hospital Ward Duty. Six credit hours. First semester. Four ward duty hours each day; twenty-four each week. Total 402 hours. Fourth year, Science Nursing. Prerequisite, first three years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

141. Hospital Ward Duty. Eight credit hours. Summer term following fourth year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total

384 hours. Prerequisite, first four years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

ROMANCE LANGUAGES AND LITERATURES

Office, 104 Hayes Hall

PROFESSORS BOWEN AND INGRAHAM, ASSISTANT PROFESSORS HAMILTON, CHAPIN, HACKER, GUTIERREZ, WILLIAMS, HAVENS, AND ROCKWOOD, MR. BERTHEMY, MR. TAILLIART, MISS HIER, MR. HADDOX, MR. MASSO, MR. SLOAN, MR. SMITH, MISS BROWN, MR. MOORE, MRS. PEARSON, MISS SCHONS, AND DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year. All instructors.

Grammar: Fraser and Squair's, or equivalent. Reader: Aldrich and Foster's, or Bowen's First Scientific. Historical and narrative prose; one or more prose comedies.

Stress is laid first upon the acquisition of a correct pronunciation, after which the energy of the student is directed toward the attainment of (1) an accurate reading knowledge of the language, and (2) facility in speaking and understanding it. Grammar and composition are made to contribute to these ends.

French 101 is given also during the second semester.

French 102 is given also during the first semester.

103-104. Modern French Literature. Four credit hours. The year. Prerequisite, French 101-102 or equivalent. All instructors.

The work of the year deals with the following subjects: (1) Contes; (2) The novel (Balzac or Hugo); (3) Lyric poetry; (4) Romantic drama (Hugo). Prose composition, with practice in speaking. Systematic attention given to syntax and idiom. Lectures supplement the work. Private reading required.

French 103 is given also during the second semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, French 103. Mr. Berthemy.

A course of rapid reading introductory to the vocabulary of scientific literature.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Elementary reading as a basis for oral and written practice.

Spanish 101 is given also during the second semester.

103-104. Intermediate Spanish. Four credit hours. The year. Prerequisite, Spanish 101-102 or equivalent. Mr. Chapin, Mr. Gutierrez.

A more comprehensive survey of the forms and syntax with more advanced reading as a basis for practice in speaking and writing.

RURAL ECONOMICS

Office, 113 Townshend Hall

PROFESSOR FALCONER, ASSISTANT PROFESSORS ERDMAN, LANTIS,
AND HUGHES

101. Farm Accounting. Two credit hours. Either semester. Mr. Hughes.

Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

103. Farm Management. Four credit hours. First semester. For third and fourth year students. Prerequisite, Economics 101. Mr. Falconer.

Lectures, recitations and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Three recitations each week. Prerequisite, Economics 101. For third and fourth year students. Required of all students who are held for a semester's work in Rural Economics.

The economics of agriculture. The economics of the production and marketing of agricultural products, the state and the

farmer, the relation of agriculture to other industries and the social relations of agricultural communities are considered.

110. Rural Community Life. Three credit hours. Second semester. Prerequisites, Economics 101 or Sociology 101. Mr. Lantis.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

113. The Distribution of Farm Products. Three credit hours. First semester. Prerequisite, Economics 101. Mr. Erdman.

A study of the distribution of agricultural products, organized methods of marketing, and prices.

120. Accounting for Country Elevators and Marketing Organizations. Two credit hours. Second semester. Mr. Hughes.

System of accounting and business practice for country marketing associations.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Advanced Farm Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or its equivalent, and Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problems of farm organization and operation.

105. Historical and Comparative Agriculture. Two credit hours. First semester. Prerequisite, Rural Economics 103 and 104. Mr. Falconer.

Lectures and recitations upon the history of agriculture and the evolution of agricultural methods, with special reference to the agriculture of the present day. The development of agricultural literature is studied.

111. Advanced Farm Management. One credit hour. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. Reference and assigned work. The study of accumulated farm management data.

114. Land Tenure. Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Falconer.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

116. Cooperation in Agriculture. Two credit hours. Second semester. Two recitations. Prerequisite, Rural Economics 104. Mr. Erdman.

A study of agricultural cooperation, mainly as found in the United States. The types of cooperative marketing, manufacturing and purchasing organizations, collective bargaining, cooperative credit and insurance.

118. Rural Community Development. Two credit hours. Second semester. Two recitations. Prerequisite, Economics 101 or Sociology 101 and Rural Economics 104 or its equivalent. Mr. Lantis.

The characteristics of rural people, the opportunities for rural leadership and qualities necessary for it, how to make a rural survey, rural social organizations and various rural social problems are considered. The preparation of written reports on assigned subjects will be required.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term. Mr. Hughes.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus. Mr. Hughes.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term. Mr. Erdman.

A study of the methods and costs of marketing farm products; the organization of the markets; cooperation as a factor in marketing and production; and proposed improvements in our marketing system.

54. Rural Community Life. Four credit hours. Second term. Mr. Lantis.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Office, 125 Shops Building

PROFESSOR W. A. KNIGHT, MR. BEEM, MR. FOUST, MR. DENMAN,
MR. BRECKUR, MR. P. L. WRIGHT, MR. H. R. WRIGHT, MR.
SENN, AND DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Denman, Mr. Senn.

Practice in carpentry, including the care of tools, fundamental principles of wood working, theory and practice of construction of farm buildings and dwellings.

This course is laid out with the intention of fitting the agricultural student to give more thoughtful and careful consideration to the detail and supervision of the construction of his own farm buildings.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire and tools, practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; the making, hardening and tempering of steel punches, drills and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

SOILS

(See Agricultural Chemistry and Soils)

SPANISH

(See Romance Languages and Literatures)

SURVEY OF AGRICULTURE

Office, 203 Townshend Hall

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester. The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR WHITE

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common, sporadic and infectious diseases, minor surgery, castration, horseshoeing and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours. First term.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation

of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS OSBURN, OSBORN, AND METCALF, ASSOCIATE PROFESSOR HINE, ASSISTANT PROFESSORS BARROWS AND KRECKER, MR. KOSTIR, MR. KENNEDY, MR. WICKLIFF, AND DEPARTMENT ASSISTANTS

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osburn, Mr. Barrows, Mr. Krecker, Mr. Kostir, Mr. Wickliff, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

Zoology 101 is given also in the second semester.

115. General Principles of Heredity. Three credit hours. Either semester. Three lectures each week. Prerequisite, Zoology 101-102 or Botany 101-102 or equivalent. Mr. Barrows.

A study of heredity in animals and plants, to serve as an introduction to heredity, as a basis for advanced work in plant and animal breeding and as an aid in the analysis of biological and sociological problems into which the question of heredity enters. The subject will be presented in lectures, illustrated with lantern slides and actual specimens. Exercises in the form of problems will be assigned. The different types of heredity studied will be chosen from the animal and plant material which best illustrates the subject. Hereditary characters found in

man will be used to a large extent. The course will be made as simple and practical as the subject will permit. Present day theories and technical applications will be left for discussion in the more advanced courses to which they properly belong.

118. Animal Parasites. Three credit hours. Second semester. Prerequisite, Zoology 101-102 or equivalent. Mr. Krecker.

A course in the animal parasites which infest the domestic and other common animals, and man. Attention is given to the influence of the parasites upon their hosts, their relation to disease, their identification and general condition of life. Two lectures and one laboratory period each week.

This course is intended to be of particular benefit to agricultural and medical students, but it also serves as an introduction to the study of parasitism for those specializing in zoology.

The insect parasites are not treated in this course. For this work see Entomology 149.

121-122. Advanced Zoology of Invertebrates. Three credit hours. The year. One lecture and two laboratory periods each week. Elective. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits and relationships of invertebrate animals together with the consideration of important biological principles. Lectures, laboratory exercises, and occasional field trips. Especially recommended as a second year course for students specializing in zoology.

123. Microtechnic. Two credit hours. First semester. Two laboratory periods each week. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A course in the theory and practice of microscopic methods, including fixing, embedding, sectioning and staining of animal tissues, making permanent preparations, and special manipulation of microscopic accessories. Laboratory work, assigned readings and conferences.

This course is designed for students intending to major in Zoology or those intending to teach in secondary schools.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

124. Animal Tissues. Two credit hours. Second semester. Two laboratory periods each week. Elective. Prerequisite, Zoology 121-122 or equivalent. Mr. Osburn, Mr. Kostir.

A comprehensive study of the origin and evolution of different types of cells and tissues in the animal kingdom. Dahlgren and Kepner's Principles of Animal Histology will be used as a guide. Laboratory work, assigned readings and conferences.

129-130. Advanced Studies in Animal Heredity. Three credit hours. The year. Prerequisite, Zoology 115. Mr. Barrows.

Part of this course will be devoted to the study of recent advances in the field of animal heredity but a large part of the work will consist in the breeding of animals in the laboratory and the analysis of data collected.

***153-154. Animal Behavior.** Two to five credit hours. The year. Prerequisite, Zoology 101-102 or equivalent and another year of biology. Mr. Barrows.

Devoted to a study of the functions of the various parts of the nervous systems of the invertebrates and vertebrates, with emphasis on the mechanics of adjustment to heat, light, chemical, and mechanical stimulation. Considerable time will be spent on experiments with living worms and insects. Lectures and laboratory work.

Required in the four-year course in entomology in the Junior or Senior year. Elective to other students. Recommended to students in psychology. Given in alternate years.

159. Animal Ecology. Three credit hours. First semester. One lecture and four hours in the field or laboratory each week. Prerequisite, Zoology 101-102 and one additional year of a biological science. Mr. Kreeker.

An introduction to a study of animals in their natural surroundings which will include ponds, streams, fields and woodlands, animal associations and the various factors which affect animals in relation to their environment.

Students who desire to continue the subject in the second half of the year can take up some particular phase of the work and should register in Zoology 142 for the second semester.

*Not given in 1920-1921.

This course is recommended to students who expect to teach biology.

FOR GRADUATES

201-202. Seminary in Zoology.

223-224. Invertebrate Embryology.

241-242. Research Work.

247-248. Invertebrate Zoology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102 or equivalent. Mr. Metcalf, Mr. Kennedy, and assistants.

The structure, physiology, development and habits of insects, as a basis for insect control and for special study in entomology; followed by a general systematic survey of insects, mites and ticks with special attention to destructive and beneficial species and the control of those injurious to farm, orchard, garden, forest, household, mill and storehouse, and the health of man and domestic animals.

Lectures, quizzes, problems and laboratory work on general anatomy, life-stages, field observations of habits and damage, and the preparation and application of remedial measures. Students are required to prepare a collection. Those desiring to collect specimens in advance should get printed instructions from the department.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Advanced Entomology. Four credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf, Mr. Kennedy.

Phylogeny, classification, anatomy, physiology, embryology, metamorphosis, adaptation, behavior, distribution, dispersal, biological and ecological relations, remedial and preventive measures.

Laboratory and field studies of internal and external anatomy, life-histories, collection and classification, greenhouse pests, scale insects and other special groups; with practice in entomological technique, making notes on observations, keeping records, planning and conducting an investigation, and preparing manuscript and illustrations for publication.

Adapted for students intending to undertake investigation or teaching in entomology.

147. Entomological Literature. Two credit hours. First semester. Prerequisite, Zoology 101-102 and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings, and preparation by each student of a report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Principles of Taxonomy. Two credit hours. Second semester. Prerequisite, Zoology 101-102 and one additional year in entomology or zoology. Mr. Osburn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of a selected group or groups of insects or other animals.

155-156. Entomology. Three credit hours. The year. Required in the course in Landscape Architecture. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

151-152. Insect Control. Three credit hours. The year. Prerequisite, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

Principles of economic entomology, utilization of parasitic and predaceous forms, entomophagous fungi and bacteria, circumvention and exclusion, cultural methods, traps and trap crops, heat, animal dips, insecticides, insecticide machinery and accessories and practical work in fumigation, spraying, inspect-

ing, preparing an entomological exhibit and a collection of economic insects, rearing and insectary methods. Practical course intended to anticipate, so far as possible, the requirements and difficulties which the student will encounter in state or federal entomological work.

149. Medical and Veterinary Entomology. Three credit hours. First semester. Prerequisites, Zoology 101-102 and either 121-122 or Entomology 107-108, or equivalents. Mr. Metcalf.

The insects, mites and ticks which cause or transmit diseases of man and domestic animals; the sources of infection, methods of transmission and interrelations with pathogenic bacteria and protozoa; the relations of the subject to parasitology, bacteriology, veterinary medicine, sanitary engineering and public health; field observations of unsanitary conditions, practice in feeding, breeding and handling experimental insects and practical problems in the control of parasites and insect-borne diseases.

The student is advised if possible to precede this course with Zoology 118.

162. Morphology and Development of Insects. Four credit hours. Second semester. Prerequisites, Zoology 101-102 and Entomology 107-108 or Zoology 121-122 or equivalents. Mr. Kennedy.

An advanced, comprehensive course on the internal structures of insects, together with what is known of their functions; morphology, histology, histogenesis, embryology and metamorphosis.

This course parallels the work of Entomology 113-114 and 137-138, with emphasis on internal structures and functions.

FOR GRADUATES

201-202. Seminary in Entomology.

241-242. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year.

TIME SCHEDULE

COLLEGE OF AGRICULTURE

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the secretary of their college.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours per semester of the course.

Key to Abbreviations

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Hall
- Ha.—Hayes Hall
- H. E.—Home Economics Building
- H. F.—Horticulture and Forestry Building
- L.—Library
- Lo.—Lord Hall
- M. L.—Machinery Laboratory
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- S.—Shops Building
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations

AGRICULTURAL CHEMISTRY AND SOILS

AGRICULTURAL CHEMISTRY

Course No.	Hours	Time	Room	Instructor
103—	5	L., M., W., at 8 M., W., at 1 Q., F., at 8 F., at 1 Lab., Tu., Th., 8 to 11 Tu., Th., 1 to 4 F., S., 8 to 11 W., F., 1 to 4	T. 205 T. 205 T. 205, 204, 200 T. 205, 204, 200 T. 210 T. 210 T. 210 T. 210	Phillips
107—108	3 to 5	W., at 4 Lab., open in afternoons	T. 205	
111—112	2 to 4	L., Tu., Th., at 11 Lab., Tu., Th., 1 to 4	T. 205	Lyman
—113	2	F., at 3; F., 9 to 12	T. 205	Phillips
—114	2	M., W., at 10	T. 106	Phillips
115—	3	L., M., at 11 Lab., M., W., 8 to 11 Tu., Th., 8 to 11 M., W., 1 to 4 Tu., Th., 1 to 4	T. 205	Phillips
—116	2	To be arranged		Phillips
121—122	3 to 5	L., W., at 3 Lab., M., W., 1 to 4	T. 205	Lyman
—123	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 M., W., 1 to 4	T. 205 T. 205 T. 205 T. 205 T. 210 T. 210	Lyman
124—	4	L., Tu., at 9 Tu., at 2 Q., Th., at 9 Th., at 2 Lab., M., W., 8 to 11 M., W., 1 to 4	T. 205 T. 205 T. 205 T. 205 T. 210 T. 210	Lyman
125—126	4	L., M., F., at 11 Lab., M., F., 1 to 4	T. 204	Lyman
201—202	5 to 10	To be arranged		Lyman

For Short Courses Only

51— 52	4	L., M., W., F., at 9 M., W., F., at 2 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 Th., 1 to 3	T. 205 T. 205	
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AGRICULTURAL CHEMISTRY AND SOILS—Continued

SOILS

Course No.	Hours	Time	Room	Instructor
—152	5	L., M., W., at 8	T. 205	Vivian, Bear
		M., W., at 1	T. 205	
		Q., F., at 8	T. 205, 204, 200	
		F., at 1	T. 205, 204, 200	
		Lab., Tu., Th., 8 to 11	T. 210	
		Tu., Th., 1 to 4	T. 210	
		F., S., 8 to 11	T. 210	
		W., F., 1 to 4	T. 210	
153—154	2	Tu., Th., at 9	T. 204	Bear
155—156	3	L., Tu., at 10	T. 205	Bear, McClure
		Lab., to be arranged		
158—157	3	M., W., at 10; Th., 1 to 4	T. 204	Bear, Conrey
—162	4	To be arranged	T.	Bear, McClure
201—202	3 to 10	To be arranged		Bear
203—204	1	To be arranged		Bear

For Short Courses Only

53— 54	3	Tu., Th., at 10; F., at 11	T. 106
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AGRICULTURAL EDUCATION

101—101	3	M., Tu., W., at 4	T. 106	Stewart
103—104	2	To be arranged		

AGRICULTURAL ENGINEERING

101—	4	M., W., F., at 3	M. L. 201	All Instructors
		Lab., Tu., 8 to 11		
		W., 8 to 11		
		Th., 8 to 11		
—101	4	M., Th., F., at 11	M. L. 201	All Instructors
		Lab., Tu., 1 to 4		
		W., 1 to 4		
		Th., 1 to 4		
103—	3	Tu., Th., 1 to 4	M. L. 202	Ives
—106	3	Tu., Th., 1 to 4	M. L. 201	Potter, Ives
—107	4	Tu., Th., at 8	M. L. 201	McCuen
		Lab., W., F., 1 to 4		
		Tu., Th., 1 to 4		
110—	3	F., 1 to 4; S., 8 to 11	M. L.	McCuen
111—112	2 to 5	To be arranged		All Instructors
—114	2	W., F., 1 to 4	M. L. 202	Ives
115—	2	Tu., Th., 1 to 4	M. L. 110	Potter
—116	3	Tu., Th., at 9	M. L. 201	Potter
		Lab., W., 1 to 4		
117—	1	F., at 11; Th., 8 to 11	M. L. 112	McCuen
—118	3	Tu., Th., 8 to 11	M. L.	Green

AGRICULTURAL ENGINEERING—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
51 —	4	Tu., Th., at 9 Lab., M., 1 to 4 S., 8 to 11 F., 1 to 4	M. L. 201	Ives
— 51	4	Tu., Th., at 3 Lab., M., 8 to 11 F., 8 to 11 S., 8 to 11	M. L. 201	Ives
52—	4	M., W., F., at 10 Lab., M., 8 to 10 F., 8 to 10	M. L. 201	Green
— 52	4	M., W., F., at 10 Lab., M., 8 to 10 F., 8 to 10	M. L. 201	Green
53—	3	Tu., Th., at 9 Lab., M., 1 to 4	M. L. 112	Potter
— 54	4	M., W., F., at 10 Lab., M., 1 to 4 S., 8 to 11	M. L. 112	McCuen

AGRICULTURAL EXTENSION

—102	2	M., F., at 11	T. 205	Ramsower
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AMERICAN HISTORY

101—102	3	M., W., F., at 8 M., W., F., at 8 Tu., Th., S., at 8 M., W., F., at 9 M., W., F., at 9 Tu., Th., S., at 9 M., W., F., at 10 M., W., F., at 10 Tu., Th., S., at 10 M., W., F., at 1 M., W., F., at 1 M., W., F., at 2 M., W., F., at 2 M., W., F., at 3 M., W., F., at 3	U. 205 L. 107 U. 209 U. 205 L. 107 U. 205 U. 205 L. 107 U. 209 U. 205 U. 209 U. 205 U. 209 U. 205 U. 209	All Instruc- tors
102—101	3	M., W., F., at 1 Tu., Th., S., at 10	U. 202 L. 207	

ANATOMY

Course No.	Hours	Time	Room	Instructor
101—102	3 or 5	L., M., at 1 Lab., M., Tu., W., 1 to 4	Bio. 102	Baker
103—104	3 to 5	L., W., at 1 Lab., W., Th., F., 1 to 4	Bio. 107	Landacre
105—106	3 to 5	To be arranged	Bio. 102	Baker
—116	3	To be arranged		
—118	3 to 5	L., Tu., at 8 Th., at 1	Bio. 100 Bio. 102	Landacre Baker,
(pre-med)		Lab., Tu., 9 to 11; Th., 8 to 11 Tu., 1 to 4; Th., 2 to 4 For 5 hrs. credit F., 1 to 4 additional		Knouff

ANIMAL HUSBANDRY

117—118	3	Tu., Th., at 8 Lab., Th., 1 to 3 F., 1 to 3	Pav.	Jacoby
119—	2	M., W., at 9	Pav.	Jacoby
—120	1	To be arranged	Pav.	Jacoby
—121	1	F., at 11	Pav.	Jacoby
—122	1	To be arranged	Pav.	Jacoby
—124	2	M., W., 1 to 3	Pav.	Jacoby
—132	3	Tu., Th., at 3 Lab., Th., 1 to 3		Kays
133—	3	Tu., Th., at 2; F., at 1	Pav.	
135—	4	M., W., F., at 2 Lab., M., 8 to 10 Th., 8 to 10	Pav.	Coffey
—135	4	M., W., F., at 10 Lab., Th., 1 to 3 M., 1 to 3	Pav.	Coffey
137—	3	M., W., F., at 9	Pav.	
—137	3	M., W., F., at 3	Pav.	Conklin
139—	3	Tu., Th., at 9 Lab., W., 1 to 3	Pav.	Kays
141—	3	Tu., Th., at 11 Lab., Tu., 1 to 3	Pav.	Conklin
—143	3	Tu., Th., at 10 Lab., Tu., 1 to 3 Th., 1 to 3	Pav.	Coffey
—145	3	M., W., at 8 Lab., Th., 1 to 3	Pav.	Conklin

ANIMAL HUSBANDRY—Continued

Course No.	Hours	Time	Room	Instructor
—147	3	Tu., Th., at 11 Lab., W., 1 to 3	Pav.	Plumb
151—	3	Th., 1 to 4 F., 1 to 4	Pav.	Kays
—153	3	Tu., Th., at 8 Lab., Tu., 1 to 3	Pav.	Conklin
155—	3	M., Th., F., at 11	Pav.	Plumb
—157	4	M., W., F., at 10 Lab., M., 1 to 3 W., 1 to 3	Pav.	Kays
163—164	2 to 5	To be arranged		
201—202		To be arranged	Pav.	Plumb

For Short Courses Only

51— 52	4	M., W., F., at 8 M., W., F., at 3 Lab., Tu., 8 to 10 Tu., 1 to 3 Th., 8 to 10 F., 1 to 3	Pav.	Kays
53—	4	M., W., F., at 10 Lab., M., 1 to 3	Pav.	Conklin
54— 54	4	M., Tu., Th., F., at 11	Pav.	
— 56	4	M., W., F., at 9 Lab., Th., 1 to 3	Pav.	
57—	4	M., W., F., at 9 Lab., Th., 1 to 3	Pav.	Coffey
59— 60	3	Tu., Th., at 10 Lab., Tu., 1 to 3 W., 1 to 3	Pav.	Jacoby

ARCHITECTURE

111—	2	W., Th., 1 to 4 Th., F., 8 to 11	Br. 1 Br. 1	Haskett Haskett
—111	2	M., Tu., 1 to 4 Th., F., 1 to 4	Br. 1 Br. 1	Haskett Haskett
113—	2	Tu., Th., at 3	Br. 104	Chubb
131—132	2	M., W., 8 to 11	Br.	Ronan
133—	3	M., W., F., at 2	Br. 104	Chubb
—136	3	M., W., F., at 3	Br. 104	Chubb

ART

Course No.	Hours	Time	Room	Instructor
117—	3	M., W., F., at 8	Ha. 201	Robinson
119—119	1	M., at 4	Ph. 200	Kelley
121—	2	M., W., 1 to 3	Ha. 201	Knauber
—121	2	M., W., 1 to 3	Ha. 201	Knauber
131—	2	M., W., 8 to 10	Ha. 303	All Instruc- tors
		M., W., 1 to 3	Ha. 303	
		Tu., Th., 8 to 10	Ha. 303	
		Tu., Th., 10 to 12	Ha. 303	
		Tu., Th., 1 to 3	Ha. 303	
		F., S., 8 to 10	Ha. 303	
—131	2	M., W., 8 to 10	Ha. 303	
		Tu., Th., 1 to 3	Ha. 303	
132—	2	M., W., 1 to 3	Ha. 300	All Instruc- tors
		Tu., Th., 1 to 3	Ha. 303	
—132	2	Tu., Th., 8 to 10	Ha. 303	
		Tu., Th., 10 to 12	Ha. 303	
		M., W., 9 to 11	Ha. 303	
		M., W., 1 to 3	Ha. 303	
133—	2	M., W., 9 to 11	Ha. 303	Norris
		Tu., Th., 9 to 11	Ha. 303	
—133	2	Tu., Th., 2 to 4	Ha. 303	Robinson
134—134	3	Tu., Th., 8 to 11	Ha. 303	Kelley
136—	2	M., W., 8 to 10	Ha. 303	Robinson
—136	2	M., W., 9 to 11	Ha. 303	Robinson
—137	3	Tu., Th., 8 to 11	Ha. 303	Robinson
138—	3	M., W., F., 1 to 3	Ha. 303	
—139	3	M., W., F., 1 to 3	Ha. 303	
141—	2	M., W., at 8	Ha. 204	All Instruc- tors
		Tu., Th., at 9	Ha. 204	
—141	2	W., F., at 8	Ha. 204	All Instruc- tors
		Tu., Th., at 10	Ha. 204	
		M., W., at 1	Ha. 204	
		Tu., Th., at 1	Ha. 204	
		Tu., Th., at 3	Ha. 204	
142—	3	Tu., Th., 1 to 3	Ha. 201	
—143	3	M., W., 1 to 3	Ha. 201	
—144	3	M., W., 2 to 4	Ha. 303	Norris
—145	3	To be arranged		
147—148	2	Tu., Th., 1 to 3	Ha. 303	Norris
151—152	3	M., W., F., at 10	Ha. 204	Kelley, Webber
153—	3	M., W., F., at 9	Ha. 204	Webber
—155	2	Tu., Th., at 2	Ha. 204	Webber
—158	5	To be arranged		Kelley
160—	3	M., W., F., at 3	Ha. 204	Kelley
—162	2	Tu., Th., 9 to 11	Ha. 300	
163—164	2	Tu., Th., 8 to 10	Ha. 303	

BACTERIOLOGY

Course No.	Hours	Time	Room	Instructor
—102	2	L., Th., at 8	V. L. 101	Masters
		Lab., Th., 1 to 4	V. L. 201	Masters, Ockerblad
107—	4 or 5	L., M., W., at 9	V. L. 102	Morrey
		M., W., at 2	V. L. 102	Morrey
		Tu., Th., at 9	V. L. 102	Morrey
		Lab., M., W., 8 to 11	V. L. 201	Masters
			V. L. 205	Ockerblad
		M., W., 1 to 4	V. L. 201	Masters
			V. L. 205	Ockerblad
		Tu., Th., 8 to 11	V. L. 201	Masters
			V. L. 205	Ockerblad
		Tu., Th., 1 to 4	V. L. 201	Masters
			V. L. 205	Ockerblad
		Tu., Th., 8 to 11	V. L. 8	Watson
		M., S., 8 to 11	V. L. 8	Watson
—108	2 to 5	L., M., W., at 9	V. L. 102	Morrey
		M., W., at 2	V. L. 102	Morrey
		Lab., M., W., F., 8 to 11	V. L. 205	Masters, Ockerblad
		M., W., 1 to 4	V. L. 205	Masters, Ockerblad
—110	2 to 5	L., Tu., Th., at 11	V. L. 102	Morrey
		Lab., Tu., Th., 1 to 4	V. L. 205	Morrey
—112	2 to 5	L., Tu., Th., at 10	V. L. 102	Morrey
		Lab., W., F., 1 to 4	V. L. 201	Morrey
—114	2 to 5	L., Tu., Th., at 9	V. L. 102	Morrey
		Lab., M., W., 1 to 4	V. L. 201	Morrey
117—118	2 to 5	L., W., F., at 1	V. L. 101	Starin
		(Either semester)		
		Lab., M., S., 8 to 11	V. L. 8	Starin, Watson
		(Second semester only)		
119—120	2	L., M., F., at 11	V. L. 102	Starin
121—122	2 to 5	Tu., Th., 8 to 12	V. L. 8	Morrey
123—124	2 to 5	Tu., Th., 8 to 12	V. L. 8	Morrey
125—126	2 to 5	Tu., Th., 8 to 12	V. L. 8	Starin, Morrey
131—132	4	L., W., F., at 8	V. L. 101	Starin
		Lab., W., F., 9 to 12	V. L. 8	Starin, Watson
141—141	7	L., M., W., F., at 1	V. L. 102	Morrey
		Lab., M., W., F., 2 to 5 and	V. L. 8	Starin, Watson
		Tu., Th., 1 to 5		
—150	4	L., M., W., at 10	V. L. 101	Morrey
		Lab., Tu., F., 1 to 4	V. L. 201	Masters, Ockerblad
		Tu., F., 1 to 4	V. L. 205	Masters, Ockerblad

BACTERIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		Tu., Th., 9 to 12	V. L. 205	Masters, Ockerblad
201—202		To be arranged		Morrey, Starin
203—204		To be arranged		Morrey, Starin

For Short Courses Only

51—	4	To be arranged
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BIBLIOGRAPHY

103—	1/2	Th., at 1	L. 107	Reeder
		Th., at 3	L. 107	Reeder
		M., at 11	L. 107	Reeder
		F., at 11	L. 107	Reeder

BOTANY

101—102	3	L., Tu., Th., at 8	B. Z. 208, 110	All Instruc- tors
		Tu., Th., at 9	B. Z. 208, 110	
		Tu., Th., at 10	B. Z. 208, 110	
		Tu., Th., at 1	B. Z. 110, 208	
		Tu., Th., at 2	B. Z. 110, 208	
		Tu., Th., at 3	B. Z. 110, 208	
		Lab., M., 10 to 12	B. Z. 108	
		M., 1 to 3	B. Z. 108	
		Tu., 8 to 10	B. Z. 108	
		Tu., 1 to 3	B. Z. 108	
		W., 8 to 10	B. Z. 108	
		W., 1 to 3	B. Z. 108	
		Th., 8 to 10	B. Z. 108	
		Th., 1 to 3	B. Z. 108	
		F., 8 to 10	B. Z. 108	
		F., 1 to 3	B. Z. 108	
—101	3	L., M., W., at 2	B. Z. 110	Stover
		Lab., M., 8 to 10	B. Z. 108	
—116	3	L., W., at 10	B. Z. 208	
		Lab., M., F., 10 to 12	B. Z. 206	Transeau
117—118	3	L., M., at 10	B. Z. 110	
		Lab., W., 1 to 5	B. Z. 66	Griggs
119—120	3	S. and M. arranged	B. Z. 210	
121—	3	L., W., at 1	B. Z. 110	Schaffner
		Lab., W., 2 to 4	B. Z. 62	
123—124	4	L., M., W., at 10	B. Z. 209	Griggs
		Lab., to be arranged	B. Z.	

BOTANY—Continued

Course No.	Hours	Time	Room	Instructor
125—126	4	L., M., W., at 9	B. Z. 110	Transeau
		Lab., Tu., Th., 1 to 3	B. Z. 112	
		Tu., Th., 3 to 5	B. Z. 112	
127—128	4	L., Tu., Th., at 11	B. Z. 110	Stover
		Lab., M., F., 1 to 3	B. Z. 210	
129—130	3 to 5	M., 1 to 4; other hours arranged	B. Z. 60	Schaffner
133—134	3 to 5	To be arranged		All Instructors
139—140	3	To be arranged	B. Z. 210	Stover
—150	3	Tu., at 9; W., 9 to 11	B. Z. 112	Transeau
151—152	3	M., at 11; M., F., 1 to 3	B. Z. 110	Sampson
155—	3	To be arranged		Waller
201—202	3 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
203—204	4 to 10	To be arranged	B. Z. 104	Schaffner, Griggs
205—206	4 to 10	To be arranged	B. Z. 112	Transeau
207—208	3 to 10	To be arranged	B. Z. 210	Griggs, Stover

For Short Courses Only

91—	4	To be arranged	B. Z.
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CHEMISTRY

105—106	4	L., M., at 8	Ch. 200	Evans and department assistants
		W., at 9	Ch. 200	
		M., at 1	Ch. 200	
		W., at 2	Ch. 200	
		Q., W., at 8	Ch. 302	
		F., at 8	Ch. 302	
		F., at 9	Ch. 101, 302	
		F., at 11	Ch. 302	
		W., at 1	Ch. 101, 302	
		F., at 1	Ch. 302	
		F., at 2	Ch. 101, 302	
		S., at 9	Ch. 101	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
109—110	4	L., F., at 8	Ch. 200	Evans and department assistants
		F., at 10	Ch. 200	
		F., at 1	Ch. 200	
		F., at 3	Ch. 200	

CHEMISTRY—Continued

Course No.	Hours	Time	Room	Instructor
		Q., M., at 10	Ch. 101	
		M., at 3	Ch. 101, 302	
		W., at 8	Ch. 207	
		W., at 10	Ch. 101, 207	
		W., at 3	Ch. 101, 302	
		S., at 8	Ch. 207	
		S., at 9	Ch. 207	
		S., at 10	Ch. 207	
		S., at 11	Ch. 207	
		Lab., M., W., 8 to 11		
		Tu., Th., 8 to 11		
		F., S., 8 to 11		
		M., W., 1 to 4		
		Tu., Th., 1 to 4		
127—	4	M., Tu., Th., F., at 11	Ch. 200	Boord
151—152	2	Tu., Th., at 8	Ch. 200	McPherson
153—154	2 or 3	Lect., Th., at 1	Ch. 207	McPherson,
		Lab., open afternoons		Boord

CIVIL ENGINEERING

131—	5	M., Th., F., at 11	Br. 1	Neilson
		Tu., Th., 2 to 5	Br.	Neilson
193—	1	Tu., at 11	Br. 207	Eno

DAIRYING

101—	4	M., W., F., at 10	T. 200	Stoltz
		Lab., Tu., 1 to 4	T. 3, 5, 10	
		F., 1 to 4	T. 3, 5, 10	
—101	4	M., W., F., at 2	T. 200	Stoltz
		Lab., Tu., 8 to 11	T. 3, 5, 10	
		F., 8 to 11	T. 3, 5, 10	
—102	4	M., W., F., at 10	T. 200	Erf, Stoltz
		Lab., Th., 1 to 4	T. 3, 4, 10	
—103	2 to 4	M., at 4	T. 200	
		Lab., to be arranged		
—104	2	F., at 1; Lab., F., 2 to 4	T. 106	
105—105	4	L., Tu., Th., at 10	T. 200	Kochheiser
		Lab., M., or Th., 2 to 5 and		
		Tu., or F., 8 to 10		
107—107	3	Tu., Th., at 11	T. 200	Stoltz
		Lab., M., 1 to 5	T. 3, 5, 10	
		W., 1 to 5		
—110	2	F. at 11; S., 8 to 12	T. 200	
111—	1	F., at 11	T. 200	Kochheiser
		Th., 8 to 11		

DAIRYING—Continued

Course No.	Hours	Time	Room	Instructor
113—114	2	To be arranged		Erf
115—	2	Tu., Th., at 11	T. 106	Erf
—116	2	M., at 11	T. 106	Erf
		Lab., to be arranged		
119—120	1	To be arranged		
121—121	9	To be arranged		Erf
201—202	5 to 10	To be arranged		Erf

For Short Courses Only

52—	3	Tu., Th., at 3	T. 200	Stoltz
		Lab., W., 8 to 11		
		F., 8 to 11		
— 52	3	Tu., Th., at 9	T. 200	Stoltz
		Lab., M., 1 to 4		
		W., 1 to 4		
53— 53	3	Tu., Th., at 3	T. 106	Erf, Stoltz
		Lab., W., 8 to 11		
		Th., 8 to 11		
55—	3	To be arranged		Stoltz
— 56	3	To be arranged		
57— 58	3	To be arranged		Erf

ECONOMICS AND SOCIOLOGY

ECONOMICS

101—102	3	M., W., F., at 8	P. 12	All Instruc-
		M., W., F., at 8	P. 206	tors
		Tu., Th., S., at 8	P. 7	
		Tu., Th., S., at 8	P. 206	
		M., W., F., at 9	P. 12	
		M., W., F., at 9	P. 13	
		Tu., Th., S., at 9	P. 12	
		Tu., Th., S., at 9	P. 206	
		M., W., F., at 10	P. 12	
		M., W., F., at 10	P. 13	
		Tu., Th., S., at 10	P. 109	
		Tu., Th., S., at 10	P. 12	
		M., Th., F., at 11	P. 207	
		M., Th., F., at 11	P. 205	
		Tu., Th., S., at 11	P. 12	
		M., W., F., at 1	P. 12	
		M., W., F., at 1	P. 13	
		M., W., F., at 2	P. 207	
		M., W., F., at 2	P. 109	
		M., W., F., at 3	P. 12	
		M., W., F., at 3	P. 13	

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
102—101	2	M., W., F., at 8	P. 109	Mark Eckelberry
		Tu., Th., S., at 8	P. 109	
		M., W., F., at 9	P. 109	
		Tu., Th., S., at 9	P. 109	
		Tu., Th., S., at 10	P. 206	
		M., W., F., at 2	P. 6	
		M., W., F., at 3	P. 109	
—120	3	M., W., F., at 2	P. 9	
139—140	3	L., Tu., Th., at 8	P. 9	
		Tu., Th., at 9	P. 9	
		Tu., Th., at 9	P. 13	
		Tu., Th., at 10	P. 13	
		Tu., Th., at 10	P. 9	
		Tu., Th., at 11	P. 6	
		Tu., Th., at 1	P. 6	
		Tu., Th., at 1	P. 9	
		Tu., Th., at 2	P. 6	
		Tu., Th., at 3	P. 6	
		Lab., M., 8 to 10	P. 11	
		M., 1 to 3	P. 11	
		M., 3 to 5	P. 11	
		Tu., 10 to 12	P. 11	
		Tu., 1 to 3	P. 11	
		W., 8 to 10	P. 11	
		Th., 10 to 12	P. 11	
		F., 8 to 10	P. 11	
		S., 8 to 10	P. 11	
		S., 10 to 12	P. 11	
140—139	3	L., Tu., Th., at 8	P. 205	
		Tu., Th., at 9	P. 205	
		Tu., Th., at 10	P. 207	
		Tu., Th., at 11	P. 109	
		Tu., Th., at 3	P. 109	
		Lab., Tu., 8 to 10	P. 11	
		Tu., 3 to 5	P. 11	
		W., 1 to 3	P. 11	
		W., 3 to 5	P. 11	
		Th., 8 to 10	P. 11	
147—148	2	Tu., Th., at 1	P. 13	Walradt

SOCIOLOGY

101—102	3	M., W., F., at 8	P. 9	All Instruc- tors
		M., W., F., at 8	Ph. 304	
		Tu., Th., S., at 8	P. 208	
		M., W., F., at 9	B. Z. 109	
		M., W., F., at 9	Ph. 302	
		Tu., Th., S., at 9	P. 208	

ECONOMICS AND SOCIOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		M., W., F., at 10	B. Z. 109	
		Tu., Th., S., at 10	P. 208	
		M., Th., F., at 11	P. 13	
		M., W., F., at 1	P. 206	
		M., W., F., at 2	P. 208	
		M., W., F., at 3	P. 208	
102—101	3	M., W., F., at 10	P. 6	
		M., W., F., at 2	P. 101	
107—	3	M., W., F., at 2	P. 12	
109—	4	M., W., F., at 8	P. 7	Hagerty
		Lab., S., 9 to 12		
—112	4	M., W., F., at 8	P. 7	Hagerty
		Lab., S., 9 to 12		

ENGINEERING DRAWING

101—	2	M., W., 8 to 10	Br.	All Instruc-
		M., Tu., 10 to 12	Br.	tors
		M., W., 1 to 3	Br.	
		M., W., 3 to 5	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		Tu., Th., 3 to 5	Br.	
		F., S., 8 to 10	Br.	
		F., S., 10 to 12	Br.	
—101	2	F., S., 8 to 10	Br.	
102—	3	L., M., at 8	Br. 200	
		M., 9 to 11; Tu., 8 to 10	Br.	
—102	3	L., Tu., at 10	Br. 200	All Instruc-
		W., at 8	Br. 200	tors
		W., at 9	Br. 200	
		W., at 10	Br. 203, 200	
		F., at 1	Br. 203, 200	
		F., at 2	Br. 200, 1	
		F., at 3	Br. 203	
		Lab., M., W., 8 to 10	Br.	
		M., Tu., 10 to 12	Br.	
		M., W., 1 to 3	Br.	
		M., W., 3 to 5	Br.	
		Tu., Th., 8 to 10	Br.	
		Tu., Th., 1 to 3	Br.	
		Tu., Th., 3 to 5	Br.	
		F., S., 8 to 10	Br.	
		F., S., 10 to 12	Br.	
103—	3	Tu., Th., S., at 8	Br. 203	French
125—125	2	L., Tu., at 1	Br. 200	French
		Tu., at 2	Br. 200	

ENGINEERING DRAWING—Continued

Course No.	Hours	Time	Room	Instructor
		Th., at 9	Br. 200	Meiklejohn
		Th., at 3	Br. 200	
		F., at 10	Br. 200	
		F., at 1	Br. 104	
		Lab., M., 8 to 11	Br.	
		W., 1 to 4	Br.	
		F., 8 to 11	Br.	
		F., 1 to 4	Br.	French, Turnbull
127—	1½	S., 8 to 11	Br. 203	
—128	1½	S., 8 to 11	Br. 203	French

ENGLISH

101—104	2	M., W., at 8	Ph. 102, 104, 302	All Instru- tors
		M., W., at 9	Ph. 304, Ha. 106	
		M., W., at 10	Ph. 202, 303	
		M., F., at 10	Ph. 204, 104	
		M., W., at 1	Ph. 302, 303	
		M., W., at 2	Ph. 304, 303	
		M., W., at 3	Ph. 104, 204	
		Tu., Th., at 8	Ph. 104, 102, Ha. 211	
		Tu., Th., at 9	Ph. 104, 204, Ha. 106	
		Tu., Th., at 10	U. 202, Ha. 200, 210	
		Tu., Th., at 1	Ph. 104, 204, U. 202	
		Tu., Th., at 2	Ph. 104, 204, 102	
		Tu., Th., at 3	Ph. 104, 204, 102	
		Tu., Th., at 4	Ph. 104	
104—101	2	Tu., Th., at 8	Ph. 303	Beck
		Tu., Th., at 1	Ph. 102	
		Tu., Th., at 4	Ph. 102	
105—106	2	Tu., Th., at 10	Ph. 104	Taylor
		M., W., at 2	Ph. 104	
133—133	3	M., W., F., at 10	Ph. 104	Graves
		Tu., Th., S., at 10	Ph. 302	
141—142	3	M., W., F., at 3	Ph. 302	Taylor
		M., W., F., at 9	Ph. 102	
		Tu., Th., S., at 9	Ph. 102	
		M., W., F., at 10	Ph. 304	
		M., W., F., at 1	Ph. 102	
		M., W., F., at 3	Ph. 102	
145—146	3	M., W., F., at 8	Ph. 204	Percival
		Tu., Th., S., at 8	Ph. 204	
		M., W., F., at 10	Ph. 204	Beck
		M., W., F., at 1	Ph. 204	
		M., W., F., at 2	Ph. 302	McKnight Graves

ENGLISH—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
91—92	2	Tu. Th., at 8		
		Tu., Th., at 10		
		Tu., Th., at 2		
		Tu., Th., at 3		

PUBLIC SPEAKING (See Public Speaking)

EUROPEAN HISTORY

101—102	2	M., W., F., at 8	U. 301	All Instru- tors
		M., W., F., at 8	U. 302	
		M., W., F., at 9	U. 301	
		Tu., Th., S., at 9	U. 302	
		M., W., F., at 10	U. 301	
		Tu., Th., S., at 10	U. 302	
		Tu., Th., S., at 11	U. 302	
		M., W., F., at 1	U. 301	
		M., W., F., at 1	U. 302	
		M., W., F., at 2	U. 301	
		M., W., F., at 3	U. 301	
102—101	2	M., W., F., at 9	U. 302	
		M., W., F., at 1	U. 302	

FARM CROPS

101—	4	M., Th., F., at 11	H. F. 108	Willard
		Lab., Tu., 1 to 3	H. F.	
		Th., 1 to 3	H. F.	
		F., 1 to 3	H. F.	
—101	4	M., W., F., at 3	H. F. 108	
		Lab., Th., 8 to 10	H. F.	
		F., 8 to 10	H. F.	
		M., 8 to 10	H. F.	
109—	4	M., Th., F., at 11	H. F. 107	
		Lab., Th., 1 to 3	H. F.	
		F., 1 to 3	H. F.	
—111	4	M., W., F., at 3	H. F. 112	
		Lab., Th., 8 to 10	H. F.	
		F., 8 to 10	H. F.	
—112	2	To be arranged	H. F.	
113—	3	Tu., Th., at 10; W., 1 to 4	H. F. 108	Park
119—120	2 to 4	To be arranged	H. F.	Park
201—202	5 to 10	To be arranged	H. F.	Park
203—204	1	To be arranged	H. F.	Park

FARM CROPS—Continued

For Short Courses Only

Course No.	Hours	Time	Room	Instructor
51— 52	4	M., W., F., at 2	H. F. 108	
		Lab., M., 8 to 10	H. F.	
		Tu., 8 to 10	H. F.	
		W., 8 to 10	H. F.	
		F., 8 to 10	H. F.	

FORESTRY (See Horticulture Courses 180-184)

GEOLOGY

103—	3	M., W., F., at 10	O. 105	Bownocker
—104	3	M., W., F., at 10	O. 105	Carman
105—	3 to 5	To be arranged; field trips Saturday		Carman
—106	3	To be arranged; field trips Saturday		
107—108	2 to 5	To be arranged		Carman
121—	3	M., W., F., at 10	O. 1	Tucker
—124	3	M., W., F., at 10	O. 1	Tucker
151—151	Agr. 3	L., Tu., Th., at 8	O. 105	
			O. 1 (2nd Sem.)	Lamborn
		Tu., Th., at 9	O. 105	
		Tu., Th., at 10	O. 1	
			O. 105 (2nd Sem.)	
		Tu., Th., at 1	O. 105	
			O. 1 (2nd Sem.)	
		Tu., Th., at 2	O. 105	
		Tu., Th., at 3	O. 105	
		Lab., M., 8 to 10		
		M., 1 to 3		
		W., 8 to 10		
		W., 1 to 3		
		F., 8 to 10		
		F., 1 to 3		
167—	3	M., W., F., at 8	O. 105	Bownocker

GERMAN

101—102	4	M., W., F., S., at 8	U. 320	Barrows
		M., W., F., S., at 9	U. 320	Evans
		M., Tu., W., Th., at 2	U. 320	Eisenlohr
		M., Tu., W., Th., at 3	U. 320	Thomas
—101	4	M., Tu., W., Th., at 1	U. 319	Thomas
102—103	4	M., W., F., S. at 9	U. 202	Eisenlohr
103—104	4	M., Tu., Th., F., at 11	U. 319	Barrows
103—106	4	M., W., F., S., at 10	U. 320	Evans
		M., Tu., W., Th., at 2	U. 319	Thomas
104—	4	M., Tu., W., Th., at 1	U. 319	Thomas
—106	4	M., Tu., W., Th., at 3	U. 319	Barrows

HISTORY AND PHILOSOPHY OF EDUCATION

Course No.	Hours	Time	Room	Instructor
101—102	3	M., W., F., at 10	Ha. 101	Anderson
		M., W., F., at 4	Ha. 101	Anderson

HOME ECONOMICS

101—102	5	L., M., W., at 9	H. E. 203	
		M., W., at 2	H. E. 102	
		Q., F., at 9	H. E. 102	
		F., at 1	H. E. 102	
		F., at 2	H. E. 102	
		S., at 9	H. E. 102	
		Lab., 1st Sem. (101)		
		M., W., 1 to 3	H. E.	
		2nd Sem. (102)		
		Tu., Th., 1 to 3	H. E.	
		1st Sem. (101)		
		Tu., Th., 8 to 10	H. E.	
		2nd Sem. (102)		
		Tu., Th., 10 to 12	H. E.	
		1st Sem. (101)		
		M., W., 9 to 11	H. E.	
		2nd Sem. (102)		
		Tu., Th., 8 to 10	H. E.	
		1st Sem. (101)		
		Tu., Th., 1 to 3	H. E.	
		2nd Sem. (102)		
		Tu., Th., 3 to 5	H. E.	
104—	3	M., W., F., at 4	H. E. 203	Linder
—104	3	M., W., F. at 4	H. E. 203	Linder
105—105	2	W., at 10	H. E. 218	Van Meter
		Lab., to be arranged		
—106	2 to 5	To be arranged	H. E.	
—110	4	Tu., Th., 9 to 12	H. E. 203	
		M., W., 9 to 12	H. E. 102	
111—112	2	L., Tu., at 3	H. E. 218	Walker
		Th., at 11	H. E. 218	
		Lab., Tu., 8 to 11	H. E.	
		W., 1 to 4 (1st Sem. only)	H. E.	
		Th., 8 to 11	H. E.	
		F., 9 to 12	H. E.	
		F., 1 to 4	H. E.	
113—	3	L., Th., at 10	H. E. 203	
		Lab., Tu., F., 10 to 12	H. E. 113, 114	
		Tu., Th., 1 to 3	H. E.	
		M., W., 1 to 3	H. E.	
—113	3	L., Tu. at 10	H. E. 203	
		Tu., Th., 1 to 3	H. E. 113, 114	

HOME ECONOMICS—Continued

Course No.	Hours	Time	Room	Instructor
—116	3	L., Th., at 10	H. E. 203	
		Lab., M., W., 1 to 3	H. E. 113	
		M., W., 8 to 10	H. E. 113	
118—118	3	F., at 11; Tu., Th., 10 to 12	H. E. 218	
		F., at 3; Tu., Th., 2 to 4	H. E. 218	
119—	4	M., W., at 3; F., 2 to 4	H. E. 218	Walker
—119	4	M., W., at 9; F., 9 to 11	H. E. 218	Walker
		M., W., at 3; F., 2 to 4	H. E. 218	Walker
121—	3	W., at 10	H. E. 203	
		Lab., Tu., Th., 8 to 10	H. E. 302	
		M., F., 10 to 12	H. E. 302	
125—126	3	To be arranged	H. E.	
127—128	3	L., Tu., Th., at 11	H. E. 102	
		Observation and practice hours to be arranged		
133—	4	M., W., F., at 9	H. E.	
		Lab., to be arranged		
201—202	2 to 5	To be arranged	H. E.	

HORTICULTURE

101—	4	M., W., F., at 9	H. F. 113	
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
103—104	4	M., W., F., at 8	H. F. 113	Montgomery
		Lab., Tu., 2 to 5		
105—106	4	M., W., F., at 9	H. F. 112	Paddock
		Lab., M., 1 to 3		
107—	3	M., Th., F., at 11	H. F. 112	Hottes
109—110	3	Tu., at 11	H. F. 113	Paddock
		Lab., to be arranged		
118—118	4	M., W., F., at 10	H. F. 113	Montgomery
		Lab., W., 2 to 4		
		F., 2 to 4		
		M., W., F., at 2	H. F. 112	
		Lab., Tu., 8 to 10		
		Th., 8 to 10		
—120	4	M., W., F., at 10	H. F. 112	
		Lab., Tu., 1 to 3		
		Th., 1 to 3		
121—122	4	M., Th., F., at 11	H. F. 112	
		Lab., W., 2 to 4		
131—132	4	M., W., F., at 10	H. F. Office	Montgomery
		Lab., F., 2 to 5		
133—	3	Tu., at 9; W., 1 to 5	H. F. 113	Montgomery
—140	3	Tu., Th., at 10; F., 1 to 3	H. F. 202	Hottes
141—142	4	M., W., F., at 8	H. F. 202	Hottes
		Lab., Th., 1 to 4		

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
—143	3	Tu., Th., at 8 Lab., Tu., 1 to 3	H. F. 202	Hottes
—144	3	Tu., Th., at 9; M., 1 to 3	H. F.	Hottes
145—146	3	M., W., at 10; F., 1 to 3	H. F.	Hottes
147—148	3	To be arranged	H. F.	Hottes
—150	3	L., to be arranged Lab., M., Tu., 1 to 4	H. F.	Elwood
151—152	2	Tu., at 10 Lab., F., 1 to 4	H. F. 201	Elwood
—154	3	M., Th., F., at 11	H. F. 201	Elwood
—156	2	M., W., at 8	H. F. 112	Elwood
157—158	3	Tu., at 11 Lab., M., W., 2 to 4	H. F. 201	Elwood
159—160	3	To be arranged	H. F.	Elwood
—162	4	Th., at 1 Lab., to be arranged	H. F. 201	Elwood
164—	3	W., at 11 Lab., M., W., 1 to 4	H. F. 201	Elwood
—166	3	M., at 1; M., 2 to 5; W., 1 to 4	H. F. 201	Elwood
—168	4	To be arranged		
169—170	3	To be arranged	H. F.	Elwood
—172	1	To be arranged	H. F.	Elwood
173—	3	Tu., at 9 Lab., to be arranged	H. F. 201	Elwood
—174	3	Tu., at 1 Lab., to be arranged	H. F. 201	Elwood
180—180	4	M., W., F., at 9 Lab., W., 1 to 4	H. F.	
181—182	3	Tu., Th., at 9 Lab., F., 1 to 4	H. F.	
183—	3	Tu., Th., at 10 Lab., M., 1 to 4	H. F.	
—184	3	M., W., F., at 8	H. F. 112	
201—202	5 to 10	To be arranged	H. F.	Paddock

For Short Courses Only

51— 52	4	M., W., F., at 3 Lab., Tu., 8 to 10	H. F. 113	
53— 54	4	M., W., F., at 1 Lab., M., 8 to 10 Tu., 8 to 10 W., 8 to 10 F., 8 to 10	H. F. 113	
55— 56	4	M., W., F., at 1 Lab., Th., 8 to 10	H. F. 112	Montgomery

HORTICULTURE—Continued

Course No.	Hours	Time	Room	Instructor
57— 58	4	M., W., F., at 11 Lab., Th., 1 to 3	H. F. 113	Paddock
59—	4	M., W., F. at 10 Lab., W., 1 to 3	H. F. 112	Paddock
— 60	4	M., Tu., Th., F., at 9	H. F. 201	Elwood
65— 66	4	M., W., F., at 9 Lab., W., 2 to 4	H. F. 202	Hottes
67—	4	M., W., F., at 10 Lab., Th., 1 to 3	H. F.	

INDUSTRIAL EDUCATION

129—129	3	Th., 1 to 4; S., 8 to 11	S.	Smith
135—135	2	M., 1 to 4 or F., 1 to 4	S.	
136—136	2	M., 1 to 4 or F., 1 to 4	S.	
—137	2	M., Tu., at 11	S.	Smith
138—138	2	M., Tu., at 11	S.	

JOURNALISM

101—102	3	M., W., at 9 M., W., at 1 Lab., to be arranged.	S. 208 S. 208	Myers Myers
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MATHEMATICS

107—107	3	M., W., F., at 8 Tu., Th. S., at 8 M., W., F., at 9 M., W., F., at 1 M., W., F., at 2 M., W., F., at 2 M., W. F., at 3 M., W. F., at 3	U. 310 U. 310 U. 310 U. 310 U. 310 U. 312 U. 310 U. 312	Rickard Rasor Bareis Rasor Arnold
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METEOROLOGY

—101	2	Tu., Th., at 10	O. 1	Bownocker
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MILITARY SCIENCE AND TACTICS

Course No.	Hours	Time	Room	Instructor
101—102	1	M., W., F., at 8; Th., at 11		
(Infantry)		Tu., Th., S., at 8; Th., at 11		
		M., W., F., at 9; Th., at 11		
		Tu., Th., S., at 9; Th., at 11		
		M., W., F., at 10; Th., at 11		
		Tu., Th., S., at 10; Th., at 11		
		M., Tu., F., at 11; Th., at 11		
		M., W. F., at 1; Th., at 11		
		M., W., F., at 2; Th., at 11		
		M., W., F., at 3; Th., at 11		
		M., W., F., at 4; Th., at 11		
103—104	1	M., W., F., at 8		
(Infantry)		Tu., Th., S., at 8		
		M., W., F., at 9		
		Tu., Th., S., at 9		
		M., W., F., at 10		
		Tu., Th., S., at 10		
		M., Tu., F., at 11		
		M., W., F., at 1		
		M., W., F., at 2		
		M., W., F., at 3		
		M., W., F., at 4		
105—106	1	M., W., F., at 8; Th., at 11		
(Artillery)		Tu., Th., S., at 8; Th., at 11		
		M., W., F., at 9; Th., at 11		
		Tu., Th., S., at 9; Th., at 11		
		M., W., F., at 10; Th., at 11		
		Tu., Th., S., at 10; Th., at 11		
		M., Tu., F., at 11; Th., at 11		
		M., W., F., at 1; Th., at 11		
		M., W. F., at 2; Th., at 11		
		M., W., F., at 3; Th., at 11		
		M., W., F., at 4; Th., at 11		
107—108	1	M., W., F., at 8		
(Artillery)		Tu., Th., S., at 8		
		M., W., F., at 9		
		Tu., Th., S., at 9		
		M., W., F., at 10		
		Tu., Th., S., at 10		
		M., Tu., F., at 11		
		M., W., F., at 1		
		M., W., F., at 2		
		M., W., F., at 3		
		M., W., F., at 4		
125—126	2	To be arranged		
127—128	2	To be arranged		
135—136	2	To be arranged		
137—138	2	To be arranged		

PHYSICAL EDUCATION

FOR MEN

Hygiene

Course No.	Hours	Time	Room	Instructor
100—100	1	Monday at 11		Nichols
	1	Monday at 2		Nichols
	1	Tuesday at 8		Nichols
	1	Wednesday at 10		Nichols
	1	Wednesday at 2		Nichols
	1	Thursday at 8		Nichols
	1	Thursday at 10		Nichols
	1	Friday at 11		Nichols

FOR MEN

101—102	1	Tu., Th., at 1		Nichols and
		Tu., Th., at 2		all instructors
		M., W., at 1		
		M., W., at 2		
		M., F., at 2		
		W., F., at 2		
		Tu., Th., at 3		
		M., W., at 3		
		M., F., at 3		
		W., F., at 3		
		Tu., Th., at 4		
		M., W., at 4		
		M., F., at 4		
		W., F., at 4		
		(Hours to be arranged for corrective work)		
107—	2	Tu., Th., at 3	Ath. House	St. John, Wilce, Castleman
—110	2	M., Th., at 11	Ath. House	Wilce
111—	1	Tu., at 4	P. 109	Castleman
—112	1	Tu., at 4	P. 109	Wilce
113—	1	Th., at 4	P. 109	St. John
—120	2	Tu., F., at 10		Nichols
—122	2	L., Th., at 10	Gymnasium	Nichols
		Lab., Tu., Th., at 5		Cobb
125—	2	Tu., F., at 10		Nichols

FOR WOMEN

100—100	1	Tu., at 11		
131—132		2 hours to be arranged		Meyer, Scofield, Ranck
133—134	1	3 hours to be arranged		Meyer
135—136	3	Tu., Th., 9 and 3		Meyer

PHYSICS

Course No.	Hours	Time	Room	Instructor
103—104	4	M., W., F., at 8	Ph. 205	Earhart
		M., W., F., at 3	Ph. 205	Earhart
		Lab., M., 1 to 3	Ph.	
		W., 9 to 11	Ph.	
		W., 1 to 3	Ph.	
105—106	4	F., 1 to 3	Ph.	
		M., W., F., at 10	Ph. 205	Earhart, Blake
		M., W., F., at 3	Ph. 200	Earhart, Blake
		Lab., Tu., 8 to 11		
		Tu., 1 to 4		
109—109	3 Agr.	Th., 1 to 4		
		S., 8 to 11		
		M., W., F., at 8	Ph. 202	Cole
		M., W., F., at 9	Ph. 202	Cole
		M., W., F., at 1	Ph. 202	Cole
		M., W., F., at 2	Ph. 202	Cole

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND
PHARMACOLOGY

101—102	3	M., W., F., at 8	Bio. 200	All Instruc- tors
		Tu., Th., S., at 8	Bio. 200	
		M., W., F., at 9	Bio. 200	
		Tu., Th., S., at 9	Bio. 200	
		M., W., F., at 10	Bio. 200	
		M., W., F., at 1	Bio. 200	
		M., W., F., at 1	Bio. 300	
		M., W., F., at 2	Bio. 200	
		M., W., F., at 3	Bio. 200	
—106	4	Tu., Th., at 1	Bio. 201-8	Bleile, Seymour, Durrant
		Lab., Tu., Th., 2 to 4		
137—138	1	Tu., 10 to 12	Bio.	

PSYCHOLOGY

101—102	3	M., W., F., at 8	U. 401	All Instruc- tors
		M., W., F., at 8	U. 412	
		Tu., Th., S., at 8	U. 400	
		M., W., F., at 9	U. 412	
		M., W., F., at 9	U. 406	
		Tu., Th., S., at 9	U. 400	
		M., W., F., at 10	U. 400	
		M., W., F., at 10	U. 401	
		M., W., F., at 10	U. 406	
		Tu., Th., S., at 10 (Pre-Med.)	U. 400	

PSYCHOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		M., Tu., F., at 11 (Pre-Med.)	U. 400	
		M., W., F., at 12	U. 400	
		M., W., F., at 1	U. 400	
		M., W., F., at 1	U. 412	
		M., W., F., at 1	U. 406	
		M., W., F., at 2	U. 406	
		M., W., F., at 2 (Pre-Med.)	U. 412	
		M., W., F., at 2	U. 400	
		M., W., F., at 3	U. 406	
		M., W., F., at 3	U. 401	
		M., W., F., at 4	U. 412	
102—101	3	M., W., F., at 9	U. 400	
		M., W., F., at 3	U. 400	
		M., W., F., at 3	U. 412	

PUBLIC HEALTH AND SANITATION

SCIENCE NURSING

—106	2	To be arranged
—110	2	To be arranged
111—	2	To be arranged
113—	2	To be arranged
115—	1	To be arranged
117—	1	To be arranged
119—	10	To be arranged
—122	2	To be arranged
—124	2	To be arranged
125—	1	To be arranged
127—	1	To be arranged
129—	2	To be arranged
131—	2	To be arranged
133—	2	To be arranged
135—	1	To be arranged
137—	1	To be arranged
139—	6	To be arranged

PUBLIC SPEAKING

101—102	2	Tu., Th., at 8	Ph. 304	Ketcham
		Tu., Th., at 8	Ph. 302	Wiley
		Tu., Th., at 10	Ph. 304	Ketcham
		Tu., Th., at 10	Li. 307	Wiley
		M., W., at 1	Ph. 304	Wiley
		Tu., Th., at 1	Ph. 304	Ketcham
		Tu., Th., at 1	Ph. 302	Wiley
		Tu., Th., at 2	Ph. 302	Wiley
101—	2	Tu., Th., at 9	Ph. 302	Wiley

ROMANCE LANGUAGES

FRENCH

Course No.	Hours	Time	Room	Instructor
101—102	4	M., W., F., S., at 8	Ha. 200, 208	All Instructors
		M., W., F., S., at 8	Ha. 106	
		M., W., F., S., at 9	Ha. 200, Ha. 211	
		M., W., F., S., at 9	H. F. 203	
		M., W., F., S., at 10	Ha. 211, H. F. 108	
		M., W., F., S., at 10	H. F. 204	
		M., Tu., F., S., at 11	Ha. 212	
		M., Tu., W., Th., at 12	Ha. 211	
		M., Tu., W., Th., at 1	Ha. 211, H. F. 107	
		M., Tu., W., Th., at 1	Ha. 106	
		M., Tu., W., Th., at 2	Ha. 211, H. F. 204	
		M., Tu., W., Th., at 2	Ha. 106	
		M., Tu., W., Th., at 3	Ha. 211, H. F. 204	
		M., Tu., W., Th., at 3	Ha. 106	
		M., Tu., W., Th., at 4	Ha. 211	
		M., Tu., W., Th., at 4	Ha. 106	
—101	4	M., Tu., W., Th., at 3	Ha. 210	
102—103	4	M., Tu., W., Th., at 3	Ha. 200	All Instructors
		M., W., F., S., at 10	Ha. 106	
103—104	4	M., W., F., S., at 8	Ha. 205, H. F. 107	
		M., W., F., S., at 9	Ha. 205, H. F. 108	
		M., W., F., S., at 10	H. F. 203, H. E. 321	
		M., Tu., W., Th., at 1	Ha. 205, H. F. 108	
		M., Tu., W., Th., at 2	H. F. 113	
		M., Tu., W., Th., at 3	Ha. 205, H. F. 203	
		M., Tu., W., Th., at 4	Ha. 205	
104—	4	M., Tu., W., Th., at 3	H. F. 108	
—106	4	M., W., F., S., at 10	Ha. 205	

SPANISH

101—102	4	M., W., F., S., at 8	Ha. 210, H. F. 108	All Instructors
		M., W., F., S., at 8	H. F. 203	
		M., W., F., S., at 9	Ha. 210, H. F. 204	
		M., W., F., S., at 9	H. F. 107	
		M., W., F., S., at 10	Ha. 210	
		M., W., F., S., at 10	H. F. 107	
		M., Tu., F., S., at 11	Ha. 210	
		M., Tu., W., Th., at 12	Ha. 210	
		M., Tu., W., Th., at 1	Ha. 210, H. F. 204	
		M., Tu., W., Th., at 1	Ha. 200	
		M., Tu., W., Th., at 2	Ha. 205, Lo. 107	
		M., Tu., W., Th., at 2	H. F. 107	
		M., Tu., W., Th., at 3	Ha. 210, H. F. 107	
		M., Tu., W., Th., at 4	Ha. 210	
—101	4	M., Tu., W., Th., at 1	Ha. 208	

ROMANCE LANGUAGES—Continued

Course No.	Hours	Time	Room	Instructor
102—103	4	M., W., F., S., at 9	Ha. 212	
		M., Tu., W., Th., at 2	Ha. 212	
103—104	4	M., W., F., S., at 10	Ha. 212, Br. 1	
		M., Tu., W., Th., at 1	Ha. 212, H. F. 203	
		M., Tu., W., Th., at 4	Ha. 212	

RURAL ECONOMICS

101—101	2	Tu., at 10; W., 1 to 4	H. F. 107	Hughes
102—	2	Tu., at 11; Th., 8 to 11	T. 204	Falconer
103—	4	M., W., F., at 8	T. 106	Falconer
		M., W., F., at 1	T. 106	Falconer
		Lab., Th., 1 to 5		
		S., 8 to 12		
104—104	3	M., W., F., at 8	B. Z. 208	
		M., W., F., at 1	B. Z. 208	
105—	2	M., W., at 9	T. 106	Falconer
—110	3	M., W., F., at 9	T. 106	Lantis
—111	1	Tu., at 11	T. 106	Falconer
113—	3	M., W., F., at 9	T. 204	Erdman
—114	2	To be arranged		Falconer
—116	2	Tu., Th., at 9	T. 106	Erdman
—118	2	To be arranged		Lantis
—120	2	M., at 11; W., 8 to 11	T. 200	Hughes
201—202	3 to 10	M., at 4	T. 204	

For Short Courses Only

51— 51	4	Tu., Th., at 1	T. 106	Hughes
		Lab., M., Tu., 8 to 10		
		Th., F., 8 to 10		
52— 52	4	Tu., Th., at 11	H. F. 106	Hughes
		Lab., to be arranged		
53—	4	To be arranged		Erdman
— 54	4	To be arranged		Lantis

SHOPWORK

101—103	2	M., at 10; F., 1 to 4	S.	Denman,
		M., at 2; M., 8 to 11	S.	Senn,
		M., at 3; Tu., 8 to 11	S.	Foust,
		M., at 2; W., 8 to 11	S.	Wright
		Tu., at 8; Tu., 1 to 4	S.	
101—	2	Th., at 3; Th., 8 to 11	S.	
—101	2	W., at 3; W., 8 to 11	S.	

SHOPWORK—Continued

Course No.	Hours	Time	Room	Instructor
103—101	2	M., at 10; F., 1 to 4	S.	Foust,
		M., at 3; Tu., 8 to 11	S.	Wright,
		W., at 10; S., 8 to 11	S.	Denman,
		F., at 9; Tu., 1 to 4	S.	Senn
		F., at 1; M., 8 to 11	S.	
103—	2	Th., at 1; W., 8 to 11	S.	
—103	2	M., at 10; W., 1 to 4	S.	

For Short Courses Only

51— 51	2	M., at 1; W., 8 to 11	S.
		F., at 11; F., 8 to 11	S.
		W., at 1; W., 2 to 5	S.
		M., at 1; M., 2 to 5	S.
52— 52	2	M., at 1; W., 8 to 11	S.
		F., at 11; F., 8 to 11	S.
		W., at 1; W., 2 to 5	S.
		M., at 1; M., 2 to 5	S.

SURVEY OF AGRICULTURE

1	Tu., at 4	T. 205	Vivian
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VETERINARY MEDICINE

151—	3	M., W., F., at 8	V. L. 100	White
—152	3	To be arranged		Grossman

For Short Courses Only

51— 52	3	M., Th., F., at 11	V. C.	Grossman White
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ZOOLOGY AND ENTOMOLOGY

ZOOLOGY

101—102	3	L., Tu., Th., at 8	B. Z. 109, 209	All Instruc- tors
		Tu., Th., at 9	B. Z. 109, 209	
		Tu., Th., at 10	B. Z. 109, 209	
		Tu., Th., at 1	B. Z. 109, 209	
		Tu., Th., at 2	B. Z. 109, 209	
		Tu. Th., at 3	B. Z. 109, 209	
		Lab., M., 1 to 3	B. Z. 65, 69	
		W., 8 to 10	B. Z. 65, 69	

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
		W., 1 to 3	B. Z. 65, 69	
		Th., 8 to 10		
		Th., 1 to 3		
		F., 8 to 10	B. Z. 65, 69	
		F., 1 to 3	B. Z. 65, 69	
		S., 8 to 10		
		Pre-Medics and Dentistry		
		M., W., at 10	B. Z. 100	
		M., 8 to 10	B. Z. 65, 69	
		M., at 9; W., at 10	B. Z. 100	
		M., 10 to 12	B. Z. 65, 69	
—101	3	M., W., at 2; M., 8 to 10	B. Z. 100, 65	
115—	3	M., W., F., at 10	B. Z. 208	Barrows
—115	3	M. W., F., at 10	B. Z. 100	Barrows
—118	3	W., F., at 8; F., 1 to 3	B. Z. 211	Krecker
121—122	3	L., Tu., at 1	B. Z. 111	Kostir
		Lab., Tu., 2 to 4;		
		Th., 1 to 3		
123—	2	To be arranged	B. Z.	Kostir
—124	2	To be arranged	B. Z.	Osburn, Kostir
129—	3	M., Th., at 11	B. Z. 209	Barrows
—130	3	M., Th., at 11	B. Z. 209	Barrows
131—132	3	M., Th., F., at 11	B. Z. 109	Osburn
139—140	2	M., at 10; Tu., 1 to 4	B. Z.	Hine
141—142	3 to 5	To be arranged	B. Z.	
145—	3	To be arranged	B. Z.	Barrows
159—	3	L., W., F., at 8	B. Z. 209	Krecker
		Lab., F., 1 to 4		
201—202	1	To be arranged	B. Z.	Osburn
223—224	3 to 5	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	
247—248	5	To be arranged	B. Z.	Osburn

ENTOMOLOGY

107—108	3	L., M., W., at 8	B. Z. 109	Metcalf
		M., W., at 1	B. Z. 209	Metcalf
		Lab. Tu., 8 to 10	B. Z. 65, 69	Metcalf
		Tu., 1 to 3	B. Z. 65, 69	Metcalf
—112	3	Tu., Th., at 8	B. Z. 211	Hine
		Lab., Th., 1 to 4	B. Z.	
		S., 8 to 11		
113—114	4	Tu., Th., at 10	B. Z.	Kennedy
		Lab., Tu., Th., 2 to 5	B. Z. 107	
137—138	3 to 5	M., W., at 10	B. Z.	Metcalf
		Lab. M., W., F., 1 to 4		

ZOOLOGY AND ENTOMOLOGY—Continued

Course No.	Hours	Time	Room	Instructor
141—142	3 to 5	To be arranged	B. Z.	
147—	2	Tu., Th., at 10	B. Z. 211	Hine
—148	2	M., W., at 9	B. Z.	Osburn
149—150	3 to 5	M., F., at 11	B. Z. 211	Metcalf
		Lab., F., 8 to 11		
151—152	3	Th., at 11	B. Z. 211	Metcalf
		Lab., Tu., Th., 1 to 4		
155—156	3	M., W, F., at 9	B. Z. 211	Hine
—162	4	M., F., at 11	B. Z.	
		Lab., to be arranged		
201—202	1	To be arranged	B. Z.	Osburn
241—242	5 to 10	To be arranged	B. Z.	

For Short Courses Only

51— 52	4	M., W., Th., F., at 2	B. Z. 211	Hine
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The Ohio State University Bulletin is issued at least twenty times during the year; monthly in June, July, August, and September, and bi-weekly in October, November, December, January, February, March, April, and May.

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The
OHIO STATE UNIVERSITY
BULLETIN

VOLUME XXV

MARCH 21, 1921

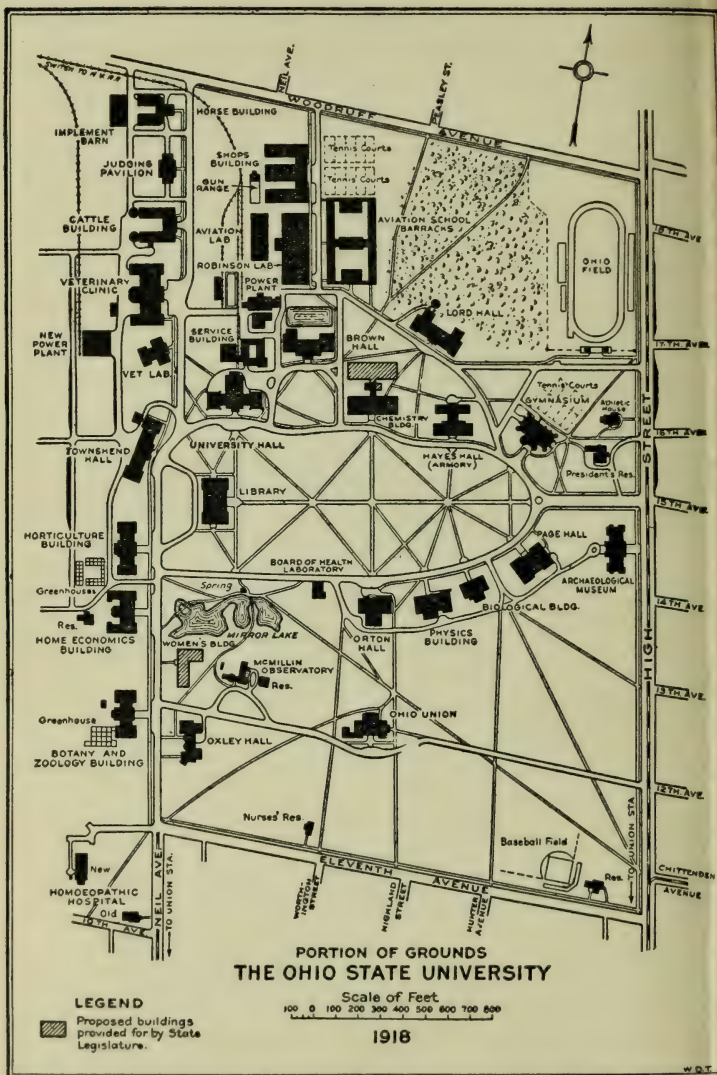
NUMBER 17

COLLEGE OF
AGRICULTURE

1921-1922

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice at Columbus, Ohio, under Act of Congress, July 16, 1894. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, Authorized July 10, 1918.



UNIVERSITY CALENDAR

1921

Summer Session, Monday, June 20 to Friday, August 12.
Entrance examinations, Tuesday to Saturday, 8 A. M., June 21 to 25.
Entrance examinations, Tuesday to Saturday, 8 A. M., September 6 to 10.
Physical examinations for all new students, Friday to Friday, September 16 to 23.
Registration Day—First Semester—Tuesday, September 20.
President's Annual Address, Wednesday, September 21, 11 A. M.
Intelligence tests for Freshmen in the Engineering College, Thursday and Friday, September 22 and 23, from 10 to 12 A. M.
Intelligence tests for all new students, Saturday, September 24.
Latest date for registration of candidates for a degree at the Commencement in June, 1922, October 1.
Registration Day, Short Courses in Agriculture — First Term — Tuesday, October 18.
Mid-semester reports to the Deans concerning delinquent students, Wednesday, November 9.
Thanksgiving recess begins November 23, 1 P. M., and ends November 29, 8 A. M.
Christmas recess begins Thursday, December 22, 6 P. M.

1922

Christmas recess ends Tuesday, January 3, 8 A. M.
Registration Day, Short Courses in Agriculture — Second Term — Tuesday, January 3.
Final examinations, Wednesday, January 25 to Thursday, February 2.
Farmers' Week, Monday, January 30 to Friday, February 3.
First semester ends Thursday, February 2, 6 P. M.

SECOND SEMESTER

Registration Day—Second Semester—Tuesday, February 7.
University Day, Wednesday, February 22.
Close of Second Term, Short Courses in Agriculture, Friday, March 17.
Mid-semester reports to the Deans, Wednesday, April 5.
Easter recess, Thursday noon, April 13 to Tuesday, April 18, 8 A. M.
Competitive Drill—Cadet Regiment—Saturday, May 27.
Memorial Day, Tuesday, May 30.
Final examinations, Wednesday, May 31 to Thursday, June 8.
Commencement, Tuesday, June 13.
Summer Session, Monday, June 19 to Friday, August 11.
Entrance examinations, Tuesday, June 20 to Saturday, June 24, 8 A. M.

THE FRANKLIN CO. CHI.																											
CALENDAR FOR 1921																											
JANUARY.							FEBRUARY.							MARCH.							APRIL.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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2	3	4	5	6	7	8	6	7	8	9	10	11	12	6	7	8	9	10	11	12	3	4	5	6	7	8	9
9	10	11	12	13	14	15	13	14	15	16	17	18	19	13	14	15	16	17	18	19	10	11	12	13	14	15	16
16	17	18	19	20	21	22	20	21	22	23	24	25	26	20	21	22	23	24	25	26	17	18	19	20	21	22	23
23	24	25	26	27	28	29	27	28	.....	.....	.....	.....	.....	27	28	29	30	31	.....	.....	24	25	26	27	28	29	30
30	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MAY.							JUNE.							JULY.							AUGUST.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	.....	.....	.....	1	2	3	4	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27
29	30	31	.....	.....	.....	.....	26	27	28	29	30	.....	.....	24	25	26	27	28	29	30	28	29	30	31	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	1	2	3	4	5	.....	.....	.....	.....	.....	1	2
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24
25	26	27	28	29	30	.....	23	24	25	26	27	28	29	27	28	29	30	.....	.....	.....	25	26	27	28	29	30	31
.....	.....	.....	.....	.....	.....	.....	30	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

THE FRANKLIN CO. CHI.																											
CALENDAR FOR 1922																											
JANUARY.							FEBRUARY.							MARCH.							APRIL.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	.....	.....	.....	1	2	3	4	.....	.....	1	2	3	4	.....	.....	.....	.....	.....	.....	.....	1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	16	17	18	19	20	21	12	13	14	15	16	17	18	12	13	14	15	16	17	18	9	10	11	12	13	14	15
22	23	24	25	26	27	28	19	20	21	22	23	24	25	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	30	31	.....	.....	.....	.....	26	27	28	.....	.....	.....	.....	26	27	28	29	30	31	.....	23	24	25	26	27	28	29
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	.....	.....	.....	.....	.....	.....
MAY.							JUNE.							JULY.							AUGUST.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
28	29	30	31	.....	.....	.....	25	26	27	28	29	30	.....	23	24	25	26	27	28	29	27	28	29	30	31	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
24	25	26	27	28	29	30	29	30	31	26	27	28	29	30	24	25	26	27	28	29	30
.....	31

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THE OHIO STATE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State and is located in the northern part of the City of Columbus.

ORGANIZATION

For convenience of administration, the departments of the University are grouped into organizations called colleges. The Ohio State University comprises a Graduate School and eleven Colleges, each under the administration of a Dean and College Faculty, as follows:

Graduate School	College of Education
College of Agriculture	College of Engineering
College of Arts, Philosophy, and Science	College of Homoeopathic Medicine
College of Commerce and Journalism	College of Law
College of Dentistry	College of Medicine
	College of Pharmacy
	College of Veterinary Medicine

SUMMER SESSION

In addition to the above, there is a Summer Session under the supervision of a Director and governing committee for the administration of the regular University courses offered in the summer.

This Bulletin is devoted exclusively to the work of the College of Agriculture for the academic year, 1921-1922.

(NOTE—The University publishes a bulletin descriptive of the work of each college. Copies may be obtained by addressing the University Examiner, The Ohio State University, Columbus, Ohio, and stating the college in which the writer is interested.)

COLLEGE OF AGRICULTURE

FOUR-YEAR CURRICULA

The four-year curricula of this College consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantages of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

WINTER COURSES

The College of Agriculture offers three Winter Courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in General Agriculture, Poultry Husbandry, and Dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the Winter Courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE

Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

The Agricultural Extension School is secured upon the application of twenty-five persons. Only one can be granted annually for a county. The following courses are offered for a School:

ANIMAL HUSBANDRY SCHOOL: Soil Fertility, Farm Crops, and Animal Husbandry.

DAIRY SCHOOL: Soil Fertility, Farm Crops, and Dairying.

HORTICULTURAL SCHOOL: Soil Fertility, Farm Crops, and Horticulture.

Only three courses are given in a school.

HOMEMAKERS' COURSE: Cooking, Baking, Canning, Home Decorations, and Home Economics.

Only such farm or household practices are given as are incident to the study of principles.

In addition to conducting schools, demonstrations in the mixing of fertilizers and in the application of spray mixtures are made, agricultural and educational exhibits at fairs and expositions are supplied, instruction on agricultural trains is furnished, and special bulletins designed to awaken interest in agricultural education are published.

For a bulletin of information concerning the Agricultural Extension Schools and for all information in regard to Extension Work, address the Director of Agricultural Extension, The Ohio State University, Columbus, Ohio.

SCIENCE NURSING

The Science Nursing Curriculum enables the student to accomplish in five calendar years what would ordinarily require seven academic years.

The Science Nursing Curriculum is offered by the Ohio State University in cooperation with the Protestant Hospital Training School for Nurses. The work in this Curriculum parallels closely the first three years of the Curriculum in Home Economics and the Three-Year Curriculum in Nursing of the Protestant Hospital Training School for Nurses.

The graduates of this course will be eligible for admission to the State examination for the registration of nurses.

Upon the satisfactory completion of the work prescribed in the Ohio State University and the Protestant Hospital Training School for Nurses, the student will be recommended for the degree of Bachelor of Science and a diploma in Nursing.

GENERAL INFORMATION

RESERVE OFFICERS' TRAINING CORPS

Under the law of Congress establishing the land grant colleges, it is required that instruction in Military Science and Tactics be included in the curricula. This instruction is given under the Defense Act of June 3, 1916, establishing in the University the Reserve Officers' Training Corps. Under normal conditions, eight commissioned officers, three warrant officers, and eleven non-commissioned officers of the Regular Army are detailed by the War Department to take charge of this department. The Board of Trustees has directed that all male students, special and regular, except those registered in the Colleges of Law, Medicine, Homoeopathic Medicine, and Dentistry, shall complete two years of military service unless especially excused by the Military and Gymnasium Board.

Self-support is not an adequate reason for excusing a student from the requirement in Military Science.

The Reserve Officers' Training Corps is organized as a brigade consisting of two regiments of infantry, each composed of three battalions of four companies each, and one regiment of field artillery, composed of two battalions of three batteries each, a band of sixty pieces, and a trumpet corps. There are two companies of men from the students in the Three-Year Course in Agriculture. The total number of men under arms averages about three thousand.

The course of instruction is both practical and theoretical, and divided into basic and advanced courses in both Infantry and Field Artillery. One-half of the time is devoted to theoretical work in the classroom and one-half of the time to practical work in the field. The basic courses are required of all Freshmen and Sophomores. The advanced courses are elective for Juniors and Seniors. Students completing the advanced course,

when recommended by the Commandant and the President of the University, are granted a commission as Second Lieutenant in the Officers' Reserve Corps by appointment from the President of the United States. No student is eligible for the advanced course until he has satisfactorily completed the basic course or its equivalent.

The allowance made by the War Department is nearly sufficient to pay for the cadet uniform. This University has adopted its own style of uniform. Students taking advanced courses in Military Science also receive fifty-three cents a day payable quarterly.

The appointment of cadet officers is made usually from those who have served in the Military Department at least one year and as a reward for excellence in their work. No compensation is paid to officers who are completing their first two years of service in the Military Department, the only exception being those who have had the equivalent of the required two years in service elsewhere. The compensation awarded at the end of each year of satisfactory service is thirty dollars for lieutenants, forty dollars for captains, and proportional sums for officers of higher rank.

Service in the band is credited as military service, the positions being assigned after competitive try-out. Members of the band who have completed two years of service in the Military Department or its equivalent are paid at the rate of twenty dollars a year and receive instruction during the four winter months from a competent band master.

WOMEN STUDENTS

As far as possible women students should make arrangements for room and board before coming to Columbus. While the rooms in Oxley Hall, the hall of residence for women, situated on the University grounds, are usually spoken for one or two years in advance, an effort will be made to secure suitable accommodations in private residences. A limited number of women students will be given table board at Oxley Hall at a price not to exceed seven dollars a week. Prospective women students should address Miss Elisabeth Conrad, Dean of Women, The Ohio State University, Columbus, Ohio.

St. Hilda's Hall has been provided for the women students of the Episcopal Church under the government of the bishops of Ohio, with a local house committee, consisting of church women identified with the University. For information, address Superintendent of St. Hilda's Hall, 169 W. 11th Avenue, Columbus, Ohio.

South Hall, a residence for women, accommodates sixty-six students. For information, address Superintendent of South Hall, 196 W. 10th Avenue, Columbus, Ohio.

FEES AND EXPENSES

GENERAL CHARGES

All University fees must be paid at the opening of each semester as a condition of admission to classes. Registration is not complete until all fees have been paid. No student will have any privileges in the classes or laboratories until all fees and deposits are paid.

Since all fees are due and payable as a part of the student's registration, no person should come to the University for registration without money sufficient to cover all of his fees and deposits.

Matriculation Fee. Every student upon his first admission to the University is required to pay a matriculation fee of \$10.00. This fee is paid but once, and is in addition to other University fees and entitles the student to the privileges of membership in the University.

Non-Resident Fee. Every undergraduate student who is not a legal resident of the State of Ohio is required to pay a non-resident fee of \$50.00 each semester of his residence in the University in addition to other University fees. The burden of registering under proper residence is placed upon the student. If there is any possible question of his right to legal residence, the matter should be brought to the attention of the Registrar and passed upon, previous to registration or the payment of fees. Any student who registers improperly under this rule shall be required to pay not only the non-resident fee but shall be assessed a penalty of \$10.00.

No person shall be considered eligible to register in the University as a resident of the State of Ohio unless he has resided in the State twelve months next preceding the date of his proposed enrollment; and no person shall be considered to have gained a residence in this State for the purpose of registering in the University while he is a student in the University.

The residence of minors shall follow that of the legal guardian.

The residence of wives shall follow that of husbands.

Aliens who have taken out their first citizenship papers and who have been residents of Ohio for twelve months next preceding the date of their enrollment in the University, shall be regarded as eligible for registration as residents of Ohio.

Incidental Fee. The fee for all students is twenty dollars a semester.

Former students, who do not pay this fee until the third day of the first semester and the second day of the second semester, must pay one dollar additional. For each day of delinquency thereafter fifty cents is added.

The fee for the Short Courses is ten dollars a term.

The fee for the Winter Course in Agriculture is ten dollars.

Laboratory Deposit. Students are required to pay for all materials consumed in laboratory work. To meet the cost of these materials a deposit ranging from two to fifteen dollars for each course requiring such supplies is made at the Bursar's office before the student can enter the laboratory. All laboratory supplies are sold at the General Store Room, Chemistry Hall, to students at cost to the University, and charged against the deposit. Any unused part of the deposit is refunded at the end of the semester.

Deposit for Uniform. The allowance made by the War Department is nearly sufficient to pay for the cadet uniform. Every student in the Military Department is required to make a deposit of not to exceed thirty dollars for his uniform during his first year of residence. If for any reason he is obliged to leave the University before the close of the academic year, such portion of the deposit that is due the student through attendance will be refunded to him. This refund is at the rate of four dollars for each month that he is in residence at the University and in at-

tendance in the Military Department. If the student remains in attendance during the entire year his full deposit is refunded to him and the uniform becomes his property, free of charge.

OTHER EXPENSES

Locker Fee. The gymnasium is free to all students, but those desiring to use a locker are charged a fee of two dollars a semester, which includes the rental of towels.

The Ohio Union. A fee of one dollar a semester is paid by all male students at registration. This entitles the student to all the privileges of the Union consistent with the Constitution and House Rules governing it.

Graduation Fee. A fee of five dollars to cover expense of graduation and diploma is required of each person receiving one of the ordinary degrees from the University, and this fee must be paid to the Bursar of the University before the degree is conferred. A like fee of ten dollars is charged each person receiving one of the higher graduate degrees.

Rooms and Board. Furnished rooms can be obtained at prices varying from ten to fifteen dollars a month. Board at the restaurants and boarding clubs near the University costs from six and a half to eight dollars a week. Board, with furnished rooms, can be obtained in private families at rates varying around ten dollars a week.

Board can be secured at the Ohio Union Commons at reasonable rates.

Textbooks. Students should not purchase textbooks until they are advised by the instructors of their respective classes.

COST OF A YEAR'S WORK

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him a year.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the Freshman year of the various courses in the College of Agriculture, and have estimated the cost for room and board at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where

boarding clubs are economically managed. Fees to the University are paid one-half at the beginning of each semester.

Matriculation fee	\$10 00
Incidental fee	40 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposits to cover laboratory materials and breakage	30 00
Deposit for uniform	30 00
Books	30 00
Board—36 weeks at \$8.00 a week.....	288 00
Room rent, at \$15.00 a month.....	135 00
General expenses	100 00
	<hr/>
	\$669 00

The item of *general expenses* is always subject to the personal habits of the individual and varies according to the degree of economy exercised.

In order to meet all the necessary expenses of registration, deposit for uniform, books, and other expenditures incident to securing a room and board, a student should come prepared to expend from \$100.00 to \$125.00 during the first ten days of a semester. After that period his board and room rent will constitute the major part of his expenses.

ASSISTANTSHIPS AND SCHOLARSHIPS

GRADUATE ASSISTANTSHIPS

To encourage graduates of this University and of other similar and approved institutions, especially those in Ohio, to continue their studies and to undertake advanced work leading to the higher degrees, the University has established assistantships in several departments. These demand from one-quarter to one-half of the time of the student for laboratory and other similar assistance—as far as possible along the line of his major subject. The remainder of his time is given to graduate work. The assistantships pay from \$250 to \$500 for the academic year

and in addition all fees are remitted, except the matriculation fee and a diploma fee for those students who receive degrees. Appointments to all assistantships are made annually in April or May for the following year. Students desiring such appointments can obtain application blanks by addressing the Dean of the Graduate School. Applications must be filed not later than March 1st.

SCHOLARSHIPS AND FELLOWSHIPS

In addition to the graduate assistantships, a limited number of scholarships and fellowships have also been established. The scholarships are open to students having a baccalaureate degree from an approved institution, and have a value of \$250 with exemption from all fixed fees except the matriculation fee. The fellowships on the other hand are open only to students who have at least the Master's degree or its equivalent, and have a value of \$500 with like exemption from all fixed fees except the matriculation fee. Scholars and fellows are selected on a basis of merit and must devote all their time to graduate work. Candidates for these positions should file their applications not later than March 1st. Application blanks may be obtained by addressing the Dean of the Graduate School.

FREE SCHOLARSHIPS

Two types of free scholarships are offered in the College of Agriculture:

(1) Scholarships good for four-year courses in the College of Agriculture.

(2) Scholarships good for the three-year courses in Agriculture and Horticulture.

FOUR-YEAR SCHOLARSHIPS

Twenty of these scholarships are assigned to each of the four districts into which the State is divided by the State Superintendent of Public Instruction for the purpose of supervising agricultural instruction given in public schools.

Each scholarship is good for four years, and five of them become available in each district each year.

These scholarships are awarded to graduates of first and second grade high schools, through a competitive examination

in high school agriculture that is held under the supervision of the State Superintendent of Public Instruction.

SHORT COURSE SCHOLARSHIPS

Three of these scholarships are assigned to each county in the State. Each scholarship is good for three years, and one becomes available each year.

These scholarships are awarded upon the recommendation of the Farm Bureau of each county.

VALUE OF SCHOLARSHIPS

The scholarships cover the University fixed fee. In the short courses a student saves \$20 a year, and in the four-year courses, \$40 a year.

For further information concerning these scholarships address the Dean of the College of Agriculture, The Ohio State University, Columbus, Ohio.

THE SHEPHERD'S SCHOLARSHIP

The Philadelphia Wool and Textile Association offers a scholarship of one hundred and fifty dollars to a disabled soldier, appointed by the Faculty of the Department of Animal Husbandry, who wishes to specialize in sheep husbandry work. This scholarship requires that the applicant be a college graduate, and provides for him to receive special work in sheep husbandry subjects during the entire year as his major line of work.

ADMISSION

The College is open on equal terms to both sexes.

THE ENTRANCE BOARD

The admission of students is in charge of the University Entrance Board, which determines the credits that shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the University Examiner, The Ohio State University, Columbus, Ohio.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS FOR AGRICULTURE

To obtain full standing applicants under twenty-one years of age must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented: two in English; two in foreign language; two in mathematics; one in history; one in physics; and seven at large.

No applicant under twenty-one years of age will be admitted to the college if he is conditioned in more than one unit. All entrance conditions must be removed within one year after admission.

Credit for Farm Experience not to exceed two units will be granted only to male applicants, on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

REQUIREMENTS FOR HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large.

REQUIREMENTS FOR SCIENCE NURSING

An applicant for admission to this course must be a graduate of a high school of the first grade or receive credit by examination for fifteen units.

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; four in foreign language; two in mathematics; one in history; one in physics; and four at large. An applicant for admission who does not present these units

will be required to carry courses in the University to make up the deficiency and this may delay her graduation.

For admission by examination or by certificate, see the Bulletin of General Information.

SPECIAL STUDENTS OF MATURE YEARS

A person of mature years who is unable to meet the entrance requirements in all respects, under certain circumstances may be permitted to matriculate for specified courses for which he can demonstrate adequate qualifications. An applicant under twenty-one years of age will not be considered. Inquiry concerning such admission should be addressed to the Entrance Board, and, to receive consideration, must reach the Board not less than ten days in advance of the opening of the semester.

ADMISSION TO SHORT COURSES

No examinations will be required for the Three-Year Courses in Agriculture or Horticulture, but the applicant must be at least seventeen years of age. He must have completed the work of the eighth grade and have had one year of practical experience on the farm. This practical experience is interpreted as meaning one year's actual farm life, twelve consecutive months.

APPLICATIONS FOR ADMISSION

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

CURRICULA

OUTLINE OF THE FIRST YEAR'S WORK OF ALL FOUR-YEAR CURRICULA

In order to permit all Agricultural students to have a year in which to find out definitely what courses they desire to pursue, the first year of all curricula in this College, except the curriculum in Home Economics, is made uniform.

The following uniform first year is required of all students entering the College of Agriculture except those following the curriculum in Home Economics:

NOTE—The figure in parenthesis following the name of each subject indicates the number of that subject in its department, the other figure the number of credit hours. For full description of the courses, see corresponding numbers under the Departments of Instruction.

First Semester			Second Semester		
Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
Botany	(101)	3	Botany	(102)	3
or			or		
Zoology	(101)	3	Zoology	(102)	3
English	(101)	2	English	(104)	2
*Mathematics	(107)	3	*Physics	(109)	3
*Engineering Drawing	(125)	2	*Geology	(151)	3
*Shopwork	(101)	2	*Shopwork	(103)	2
Survey of Agriculture		1	Military Science		1
Military Science		1	Physical Education		1
Physical Education		1			
Physical Education	(100)	1			
Hygiene					

Students may substitute 4 hours of German, French, or Spanish throughout the year for the two hours each of English and Shopwork; in which case, the English must be taken in the second year.

Students planning to specialize in Farm Crops should schedule Botany 101-102 the first year and Zoology 101-102 the second year.

Students expecting to major in Landscape Architecture should consult the outlined curriculum. (See page 20.)

*These courses may be taken in either semester.

THE OHIO STATE UNIVERSITY

SECOND YEAR

First Semester		Second Semester	
Agricultural Chemistry	(103) 3	Soils	(152) 3
Agricultural Chemistry	(101) 2	Soils	(150) 2
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Military Science	1	Military Science	1

And at least 7 hours from the following:

Physiology	(101) 3	Physiology	(102) 3
Psychology	(101) 3	Psychology	(102) 3
Economics	(101) 3	Economics	(102) 3
Entomology	(107) 3	Entomology	(108) 3
Foreign Language	4	Foreign Language	4
*Animal Husbandry	(135) 4	Animal Husbandry	(137) 3
Horticulture	(101) 4	Horticulture	(*118) or (120) 4
Farm Crops	(*101) or (109) 4	*Agricultural Engineering	(101) 4
*Dairying	(101) 4	Dairying	(102) 4
Geology	(105) 3	Geology	(106) 3
English (105, 141 or 145)	2 or 3	English	(106 or 133) 2 or 3
Public Speaking	(101) 2	Meteorology	(101) 2
Anatomy	(101) 3	Public Speaking	(102) 3
Botany	(125) 4	Anatomy	(102) 3
Zoology	(121) 3	Farm Crops	(111) 4
Zoology	(115) 3	Botany	(126) 4
		Zoology	(122) 3

*These courses may be taken in either semester.

THIRD YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

FOURTH YEAR

Agricultural Electives	12	Agricultural Electives	12
(including major subject)		(including major subject)	
Other Electives	5	Other Electives	5

REQUIREMENTS FOR GRADUATION

A part of every student's curriculum is prescribed in the preceding outline; the remainder of the student's work is elective, except as indicated below:

MAJOR SUBJECT

Before the close of the second year, the student must choose a department in which he will carry his major work throughout the third and fourth years. The head of the department or other instructor appointed by him, will become the student's adviser with the authority to designate one minor subject.

Major in Agriculture: Students majoring in agricultural subjects must take Economics 101-102, and in addition at least one semester's work in the following departments: Agricultural Engineering, Animal Husbandry, Dairying, Entomology, Farm Crops, Horticulture, and Rural Economics.

Major in Horticulture: Students majoring in horticultural and forestry subjects must take Economics 101-102, Entomology 107-108, Botany 125-126, and Botany 116.

Major in Landscape Architecture: Students majoring in Landscape Architecture must follow the curriculum as outlined on page 20.

Major in Applied Entomology: Students majoring in Applied Entomology must follow the curriculum as outlined on page 23.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than forty hours in any one department will be credited towards a degree.

WORK IN OTHER COLLEGES

A student may elect not to exceed five hours a semester during the third and fourth years from work offered in any other college except the Colleges of Law, Medicine, Homoeopathic Medicine and Dentistry.

FARM EXPERIENCE

As a prerequisite for graduation in all the courses in the College of Agriculture, except Home Economics, students graduating in June, 1920, must have had two summers of farm experience; in 1921, three summers of farm experience; and in 1923, one full year of farm experience. This requirement shall

be interpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his third year.

REQUIREMENTS FOR A DEGREE

On the completion of one hundred and forty-three semester hours, including military science, physical education, and hygiene, the student will be recommended for the degree, Bachelor of Science.

LANDSCAPE ARCHITECTURE

FIRST YEAR

Same as required in the other curricula of the College, except the curriculum in Home Economics. Students expecting to elect the curriculum in Landscape Architecture should take Botany 101-102 in place of Zoology 101-102 and Art 131-132 in place of Shopwork 101-103, and Horticulture 150.

SECOND YEAR

First Semester		Second Semester	
Architecture	(131) 2	Art	(141) 2
Civil Engineering	(131) 5	Horticulture	(154) 3
Engineering Drawing	(108) 3	French	4
Horticulture	(151) 2	Horticulture	(152) 2
French	4	Horticulture	(158) 3
Horticulture	(157) 3	Landscape Design	
Landscape Design		Architecture	(132) 2
Military Science	1	Military Science	1

THIRD YEAR

Architecture	(133) 3	Architecture	(136) 3
History of Architecture		History of Architecture	
Art	(133) 2	Art	(136) 2
Economics	(101) 3	Economics	(102) 3
Civil Engineering	(133) 1	Horticulture	(162) 4
Horticulture	(159) 3	Horticulture	(160) 3
Advanced Landscape Design		Advanced Landscape Design	
Entomology	(155) 3	Elective	2 or 3
Elective	2 or 3		

FOURTH YEAR

Architecture	(113) 2	Art	(137) 3
Art	(147) 2	Botany	(116) 3
Horticulture	(145) 3	Plant Pathology	
Horticulture	(164) 3	Horticulture	(174) 3
Landscape Surveying		Civic Design	
Horticulture	(169) 3	Horticulture	(170) 3
Psychology	(101) 3	Horticulture	(166) 3
Horticulture	(173) 3	Landscape Engineering	
Civic Design			

HOME ECONOMICS

FIRST YEAR

First Semester

Chemistry	(105 or 109)	4
Art	(131)	2
English	(101)	2
Home Economics	(111)	2
Bibliography	(103)	$\frac{1}{2}$
Engineering Drawing	(127)	$1\frac{1}{2}$
Botany or Zoology	(101)	3
Physical Education	(131)	1
Physical Education	(100)	1
Hygiene		

Second Semester

Chemistry	(106 or 110)	4
Art	(141)	2
English	(104)	2
Home Economics	(112)	2
Art	(119)	1
Engineering Drawing	(128)	$1\frac{1}{2}$
Botany or Zoology	(102)	3
Physical Education	(132)	1

Those students who desire to study modern language may postpone Art 131, 141, and Engineering Drawing 127, 128 until later in their course.

SECOND YEAR

(Not given until 1922-1923)

Chemistry	(127)	2	Chemistry	(128)	1
Agricultural Chemistry	(123)	3	Agricultural Chemistry	(124)	4
Home Economics	(101)	5	Home Economics	(102)	5
Physiology	(101)	3	Physiology	(102)	3
English	(105 or 107)	2	English	(106 or 108)	2
Physical Education	(133)	1	Physical Education	(134)	1

THIRD YEAR

(Not given until 1923-1924)

Economics	(101)	3	Economics	(102)	3
Bacteriology	(107)	4	Home Economics	(104)	3
*Home Economics	(121)	3	Home Economics	(118)	3
Psychology	(105)	3	*Home Economics	(113)	3
*Art	(121)	2	Home Economics	(110)	4

FOURTH YEAR

Sociology	(101)	3	Sociology	(102)	3
Home Economics	(119)	4	English or Journalism	2 or 3	
*Home Economics	(105)	2-5			
English or Journalism		2 or 3			

Electives to complete 127 hours.

*NOTE—In special cases substitution may be made for one or more of these courses upon the consent of the Head of the Department of Home Economics. Such substitution must be made before the end of the year preceding that in which the course is to be taken.

The schedule card of studies for the fourth year must be filled out in conference with the Head of the Department of Home Economics. The card must be signed by the Head of the Department before it can be approved by the Secretary of the College. Students not offering entrance credit in American History must include six hours of American History.

The department aims to give general training in Home Economics and also to provide special opportunity for study of the

problems of home making, teaching, extension work, hospital dietetics, institutional management, social welfare work, and other phases of the Home Economics field. Students desiring to specialize should consult the Head of the Department not later than the close of the second year.

SECOND YEAR

(Given only in 1921-1922)

First Semester		Second Semester	
Agricultural Chemistry	(123) 3	Agricultural Chemistry	(124) 4
Chemistry	(127) 2	Chemistry	(128) 1
Home Economics	(101) 5	Home Economics	(102) 5
Botany or Zoology	(101) 3	Botany or Zoology	(102) 3
English	(105 or 107) 2	English	(106 or 108) 2
Engineering Drawing	(127) 1½	Engineering Drawing	(128) 1½
Physical Education	(133) 1	Physical Education	(134) 1

THIRD YEAR

(Given only in 1921-1922)

Economics	(101) 3	Economics	(102) 3
Bacteriology	(107) 4	Home Economics	(110) 4
Bibliography	(103) ½	Home Economics	(118) 3
*Art	(121) 2	*Home Economics	(113) 3
Home Economics	(104) 3	*Home Economics	(121) 3
Agricultural Chemistry	(124) 4		

THIRD YEAR

(Given only in 1922-1923)

Economics	(101) 3	Economics	(102) 3
Bacteriology	(107) 4	Home Economics	(104) 3
Physiology	(101) 3	Physiology	(102) 3
Psychology	(105) 3	*Home Economics	(113) 3
*Art	(121) 2	Home Economics	(118) 3
*Home Economics	(121) 2	Home Economics	(110) 4

FOURTH YEAR

(Given only in 1922-1923)

Sociology	(101) 3	Sociology	(102) 3
Home Economics	(119) 4	English or Journalism	2 or 3
Home Economics	(105) 2-5	Engineering Drawing	(128) 1½
English or Journalism	2 or 3		
Engineering Drawing	(127) 1½		

Electives to make at least 15 hours throughout the year.

*NOTE—In special cases substitution may be made for one or more of these courses upon the consent of the Head of the Department of Home Economics. Such substitution must be made before the end of the year preceding that in which the course is to be taken.

The schedule card of studies for the fourth year must be filled out in conference with the Head of the Department of Home Economics. The card must be signed by the Head of the Department before it can be approved by the Secretary of the College. Students not offering entrance credit in American History must include six hours of American History.

REQUIREMENTS FOR A DEGREE

Upon the satisfactory completion of the course as outlined, under the restrictions and requirements prescribed above, the student will be recommended for the degree, Bachelor of Science.

APPLIED ENTOMOLOGY

Uniform First Year

SECOND YEAR

First Semester			Second Semester		
Entomology	(107)	3	Entomology	(108)	3
Botany	(101)	3	Botany	(102)	3
Modern Language		4	Modern Language		4
French, Spanish or German			French, Spanish or German		
Farm Crops	(101 or 109 or 111)	4	Art	(131)	2
Military Science		1	Military Science		1
Elective		2	Elective		4

THIRD YEAR

Entomology	(113)	4	Entomology	(114)	4
Bacteriology	(107)	4	Bacteriology	(108)	4
Physiology	(101)	3	Physiology	(102)	3
or			or		
Anatomy	(101)	3	Anatomy	(102)	3
Architecture	(111)	2	Botany	(116)	3
Public Speaking	(101)	2	Public Speaking	(102)	2

Elective: During the third year the student must elect either Zoology (153) 2 or Entomology (149) 4.

NOTE—Unless the candidate for a degree has had a full equivalent, not less than one summer of field work in an Experiment Station, or other practical work in Entomology, is required before graduation.

FOURTH YEAR

Entomology	(147)	2	Entomology	(112)	3
Entomology	(151)	3	or		
Elective	9 or 10		Entomology	(162)	4
			Entomology	(148)	2
			Entomology	(152)	3
			Elective	8 or 9	

Elective: During the fourth year the student must elect either Zoology (153) 2 or Entomology (149) 4, whichever was not elected during the third year.

SUGGESTED OUTLINES

For a student who desires to specialize in a definite department, the following outline of the sequence of courses is given to aid him in the selection of his electives. This outline is merely suggestive. The definite requirements for the degree in this College are stated on pages 17-20.

AGRICULTURAL CHEMISTRY AND SOILS

Students who take the major subject in Agricultural Chemistry and Soils may specialize in any of the following phases of the subject:

Chemistry of Animal Nutrition
 Chemistry of Dairy Products
 Chemistry of Fertilizers
 Chemistry of Plant Life
 Chemistry of Soils
 Food Inspection and Analysis

All students intending to major in this department should consult Mr. Lyman or Mr. Bear for advice in outlining a curriculum. It is desirable that this consultation be held soon after admission to the College in order that the student may take best advantage of optional and elective privileges.

Students majoring in dairying, animal husbandry, crops, horticulture, botany and zoology can elect minors in the Department of Agricultural Chemistry and Soils to advantage.

AGRICULTURAL EDUCATION

FUNDAMENTAL COURSES:

*Elementary Zoology	(101-102)	6
*General Botany	(101-102)	6
*Elementary Chemistry (105-106) or General Chemistry	(109-110)	8
*Agricultural Mathematics	(107)	3
*General Physics	(109)	3
*Principles of Geology	(151)	3
General Bacteriology	(107)	4
*Carpentry and Forging (Shopwork)	(101-103)	4
*Mechanical Drawing	(125)	2
*English	(101-104)	4
*Principles of Economics	(101-102)	6
*Survey of Agriculture		1

*Required courses in the College of Agriculture.

SCIENTIFIC AGRICULTURE:

*General Agricultural Chemistry	(103)	5
*Elementary Soils	(152)	5
Farm Crops		
*Field Crop Production	(101)	4
Cereal Crops	(109)	4
Forage Crops	(111)	4
*Farm Horticulture	(118)	4
*Economic Entomology	(107-108)	3
Animal Husbandry		
*Elementary Live Stock Judging	(135)	4
Principles of Feeding	(137)	3
Dairy Cattle Production and Management	(145)	4
Poultry Husbandry	(117-118)	3
*Principles of Dairying	(101)	4
Agricultural Engineering		
*Farm Engineering	(101)	4
Drainage	(106)	3
Rural Economics		
Farm Accounting	(101)	2
Farm Management	(103)	4
*Agricultural Economics	(104)	3

PROFESSIONAL EDUCATIONAL SUBJECTS:

Psychology		3
Principles of Teaching		3
Rural Community Life	(110)	3
Methods of Teaching Vocational Agriculture	(101)	3
Observation Teaching of Agriculture	(103)	3
Practice Teaching of Agriculture	(104)	3
Methods of Agricultural Extension	(102)	2
Elective		5

Total

136

Students wishing to major in departments in which only one course is recommended above may, by consulting the Department of Agricultural Education, make arrangements for substitutions that will enable them to major in any department.

*Required courses in the College of Agriculture.

AGRICULTURAL ENGINEERING

FIRST YEAR:	Uniform first year		
SECOND YEAR:	Agricultural Engineering.....	(101)	4 hours
	Agricultural Engineering.....	(106)	3 hours
THIRD YEAR:	Agricultural Engineering.....	(103)	3 hours
	Agricultural Engineering.....	(107)	4 hours
	Suggested Electives:		
	Physics.....	(105-106)	8 hours

FOURTH YEAR:	Agricultural Engineering.....(110)	3 hours
	Agricultural Engineering...(111-112)	2 to 5—2 to 5 hours
	Agricultural Engineering.....(118)	3 hours
	Elective: Mathematics.....(131-132)	10 hours

All students intending to major in this department should consult the department instructors before making schedules for the second year. A complete outline has been worked out so as to eliminate all conflicts and to secure all required work in a logical order.

ANIMAL HUSBANDRY

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Animal Husbandry.....(135)	4 hours
	Elementary Live Stock Judging	
	Animal Husbandry.....(137)	3 hours
	Principles of Feeding	
THIRD YEAR:	Animal Husbandry.....(139)	4 hours
	Horse Production and Management	
	Animal Husbandry.....(141)	4 hours
	Beef Cattle Production and Management	
	Animal Husbandry.....(143)	4 hours
	Swine Production and Management	
	Animal Husbandry.....(145)	4 hours
	Dairy Cattle Production and Management	
	Animal Husbandry.....(147)	4 hours
	Sheep Production and Management	
FOURTH YEAR:	Animal Husbandry.....(151)	3 hours
	Advanced Live Stock Judging	
	Animal Husbandry.....(153)	3 hours
	Meats and Meat Products	
	Agricultural Chemistry.....(111-112)	2 or 4—2 or 4 hours
	Animal Nutrition	
	Animal Husbandry.....(155)	3 hours
	Live Stock Markets and Marketing	
	Animal Husbandry.....(157)	4 hours
	Breeding Farm Animals	
	Animal Husbandry.....(163-164)	2 to 5—2 to 5 hours
	Research and Thesis	

DAIRYING

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Dairying.....(101)	4 hours
	Principles of Dairying	
	Dairying.....(102)	4 hours
	Farm Dairying	

THIRD YEAR:	Dairying.....	(115)	2 hours
	Dairy Buildings		
	Dairying.....	(105)	4 hours
	Buttermaking		
	Dairying.....	(111)	1 hour
	Dairy Mechanics		
	Dairying.....	(107)	3 hours
	Cheesemaking		
FOURTH YEAR:	Bacteriology.....	(107)	4 hours
	General Bacteriology		
	Bacteriology.....	(110)	4 hours
	Dairy Bacteriology		
	Dairying.....	(113-114)	2—2 hours
	Advanced Dairying		
	Dairying.....	(103)	4 hours
	City Milk Supply		
	Dairying.....	(110)	2 hours
	Ice Cream Making		
	Dairying.....	(119-120)	1—1 hour
	Proseminary		
	Dairying.....	(116)	2 hours
	Milk Condensing		

FARM CROPS

FIRST YEAR:	Botany 101-102 instead of Zoology 101-102		
	Otherwise, uniform first year		
SECOND YEAR:	Farm Crops.....	(109)	4 hours
	Cereal Crops		
	Farm Crops.....	(111)	4 hours
	Forage Crops		
	Zoology.....	(115)	3 hours
THIRD YEAR:	General Principles of Heredity		
	Farm Crops.....	(113)	3 hours
	Plant Breeding		
	Farm Crops.....	(123)	2 hours
	Crop Ecology		
	Farm Crops.....	(112)	2 hours
	Special Crops		
	Botany.....	(125-126)	4—4 hours
FOURTH YEAR:	Plant Physiology		
	Botany.....	(116)	3 hours
	Plant Pathology		
	Farm Crops.....	(119-120)	2—2 hours
	Minor Investigations		

FLORICULTURE

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Horticulture.....(101)	4 hours
	Principles of Horticulture	
	Horticulture.....(132)	4 hours
	Greenhouse Construction and Management	
THIRD YEAR:	Horticulture.....(141-142)	4—4 hours
	Commercial Floriculture	
	Horticulture.....(145-146)	3—3 hours
	Garden Flowers	
	Horticulture.....(156)	2 hours
	Landscape Architecture	
FOURTH YEAR:	Horticulture.....(143)	3 hours
	The Flower Shop	
	Horticulture.....(107)	3 hours
	Plant Variations	
	Horticulture.....(147-148)	3—3 hours
	Systematic Floriculture	
	Horticulture.....(144)	3 hours
	Conservatory and Bedding Plants	

POMOLOGY AND VEGETABLE GARDENING

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Horticulture.....(101)	4 hours
	Principles of Horticulture	
	Horticulture.....(120)	4 hours
	Small Fruits and Grapes	
THIRD YEAR:	Horticulture.....(103-104)	4—4 hours
	Commercial Vegetable Gardening	
	Horticulture.....(105-106)	4—4 hours
	Pomology	
FOURTH YEAR:	Horticulture.....(109-110)	3—3 hours
	Experimental Horticulture	
	Horticulture.....(133)	3 hours
	Horticultural Products	
	Horticulture.....(132)	4 hours
	Greenhouse Construction and Management	
	Horticulture.....(121-122)	4—4 hours
	Systematic Pomology	
	Horticulture.....(181)	4 hours
	Systematic Vegetable Gardening	
	Horticulture.....(140)	3 hours
	Amateur Floriculture	

PLANT PATHOLOGY

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Botany.....(123)	4 hours
	Plant Morphology	
	Botany.....(116)	3 hours
	Plant Pathology	
THIRD YEAR:	Botany.....(127-128)	4—4 hours
	Plant Pathology	
	Botany.....(125-126)	4—4 hours
	Plant Physiology	
	Bacteriology.....(107)	4 hours
FOURTH YEAR:	Botany.....(139-140)	3—3 hours
	Advanced Plant Pathology	
	Botany.....(151-152)	3—3 hours
	Plant Micro-Chemistry	
	Entomology.....(107-108)	3—3 hours

POULTRY HUSBANDRY

THIRD YEAR:	Poultry Husbandry.....(117-118)	3—3 hours
	Poultry Husbandry.....(120)	1 hour
	Poultry Feeding	
	Poultry Husbandry.....(122)	1 hour
	Incubator Practice	
FOURTH YEAR:	Poultry Husbandry.....(119)	2 hours
	Poultry Management	
	Poultry Husbandry.....(124)	2 hours
	Poultry Judging	

RURAL ECONOMICS

FIRST YEAR:	Uniform first year	
SECOND YEAR:	Economics.....(101-102)	3—3 hours
	Principles of Economics	
	Rural Economics.....(101)	2 hours
	Farm Accounting	
THIRD YEAR:	Rural Economics.....(104)	3 hours
	Agricultural Economics	
	Rural Economics.....(110)	3 hours
	Rural Community Life	
	Rural Economics.....(113)	3 hours
	The Distribution of Farm Products	

FOURTH YEAR:	Rural Economics.....	(103)	4 hours
	Farm Management		
	Rural Economics.....	(116)	2 hours
	Cooperation in Agriculture		
	Rural Economics.....	(102)	2 hours
	Advanced Farm Accounting		
	Rural Economics.....	(118)	2 hours
	Rural Community Development		
	Rural Economics.....	(111)	1 hour
	Advanced Farm Management		

CURRICULUM IN SCIENCE NURSING

FIRST YEAR

At the University and the Protestant Hospital

First Semester				Second Semester			
Chemistry	(105 or 109)	4		Chemistry	(106 or 110)	4	
English	(101)	2		English	(104)	2	
Anatomy	(101)	3		Anatomy	(116)	3	
Psychology	(101)	3		Psychology	(102)	3	
Engineering Drawing	(127)	1½		Engineering Drawing	(128)	1½	
Science Nursing	(101)	2		Science Nursing	(102)	2	
Bibliography	(103)	½		Bibliography	(102)	1	
Physical Education	(131)	1		Physical Education	(132)	1	
Physical Education	(100)	1					
Hygiene							

All students enrolled in the Science Nursing Course will be in the Protestant Hospital every Saturday morning during the first year. At the close of the second semester of the first year, the students will report immediately to the Protestant Hospital for a nursing period of eight weeks. A month's vacation will be arranged before the opening of the second semester of the second year.

FIRST SUMMER NURSING PERIOD

At the Protestant Hospital

Science Nursing	(103)	1
Drugs and Solutions		
Science Nursing	(104)	8
Hospital Ward Duty		

SECOND YEAR

At the University

Chemistry	(127)	4	Agricultural Chemistry	(123)	4
Organic Chemistry			Household Chemistry		
Physiology	(101)	3	Physiology	(102)	3
Home Economics	(101)	5	Home Economics	(102)	5
Bacteriology	(107)	4	Bacteriology	(108)	4
Physical Education	(133)	1	Physical Education	(134)	1

At the close of the second semester of the second year, the students will report immediately to the Protestant Hospital for the second summer term in Practical Nursing. Period eight weeks. A vacation of one month will be arranged.

SECOND SUMMER NURSING PERIOD

At the Protestant Hospital

Science Nursing	(119)	8
Hospital Ward Duty		

THIRD YEAR

*At the Protestant Hospital**At the University*

Science Nursing	(111)	2	Agricultural Chemistry	(124)	4
Science Nursing	(113)	2	Sociology	(101)	3
Science Nursing	(115)	1	Economics	(120)	3
Science Nursing	(117)	1	Public Health	(121)	2
Science Nursing	(123)	8	Public Speaking	(102)	2
			Science Nursing	(122)	2

At the close of the second semester of the third year, the students will report immediately to the Protestant Hospital Training School for Nurses for the third nursing period of eight weeks. A month's vacation will be arranged.

THIRD SUMMER NURSING PERIOD

At the Protestant Hospital

Science Nursing	(141)	8
Hospital Ward Duty		

FOURTH YEAR

*At the Protestant Hospital**At the University*

Science Nursing	(125)	1	Home Economics	(110)	4
Science Nursing	(127)	1	Home Economics	(119)	4
Science Nursing	(129)	2	Public Health	(106)	2
Science Nursing	(131)	2	Public Health	(110)	2
Science Nursing	(133)	2	Sociology	(112)	4
Science Nursing	(135)	1			
Science Nursing	(137)	1			
Science Nursing	(139)	6			

At the close of the second semester of the fourth year, the students will report immediately to the Protestant Hospital Training School for Nurses for the completion of their course in Nursing. A vacation will be arranged.

FIFTH YEAR

The work of the fifth year will cover two semesters and will be arranged between the Protestant Hospital Training School for Nurses and the University.

The student will be permitted to make a selection of the field of nursing in which she wishes to specialize. The course selected must aggregate not less than sixteen credit hours for each semester. Elective courses, divided into field and classroom work, may be arranged covering the following:

- (1) Public Health Nursing
- (2) Home Economics
- (3) Social Service
- (4) Teaching in Schools of Nursing Training

The course of study to be followed under each of these headings must be endorsed by the Director of Public Health and Nursing, College of Medicine, before the end of the fourth year.

For fuller description of these curricula see the bulletins of the respective colleges.

Degree. Upon the satisfactory completion of the work described above, the student will be granted the degree of Bachelor of Science and a diploma in Nursing, and for the satisfactory completion of any of the curricula elected in the fifth year the respective certificate, diploma, or other form of recognition regularly granted therefor.

COMBINATION CURRICULA

The term Combination Curriculum, as applied to a course of study in this College, refers to the combination Arts-Agriculture curriculum between the Colleges of Arts and Agriculture. Combination curricula are offered in Arts-Agriculture, Arts-Horticulture and Arts-Home Economics. These courses have been established for students who desire more Arts College work than can be given in a technical course and more technical work than can be given in an Arts College course. Similar courses have been adopted with other institutions.

These curricula, continuing five years, are cooperative between the University and other colleges of the State and become effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the cooperating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former

college, receives credit for the work of that year done in absentia, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capital University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

ARTS-AGRICULTURE

Leading to the degree of Bachelor of Arts at the end of four years and Bachelor of Science at the end of five years.

FIRST YEAR

First Semester		Second Semester	
English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Zoology	(101) 3	Zoology	(102) 3
or		or	
Botany	(101) 3	Botany	(102) 3
American, European or		American, European or	
Industrial History	3	Industrial History	3
Military Science	1	Military Science	1
Physical Education	1	Physical Education	1
Physical Education	(100) 1		
Hygiene			

SECOND YEAR

English	(141 or 145) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Engineering Drawing	(125) 2	Art	2
Modern Language	4	Modern Language	4
Military Science	1	Military Science	1

THIRD YEAR

First Semester		Second Semester	
Economics	(101) 3	Economics	(102) 3
Physics	(103) 4	Physics	(104) 4
Geology	3	Geology	3

Elective 6 or 7 hours the year on approval of adviser

FOURTH YEAR

Animal Husbandry	4	Choice of any two of these the fourth year. Remaining two the fifth year.
Agricultural Chemistry	4	
Rural Economics	3	
Farm Crops or Soils	4 or 5	

In addition to the two selected at least ten hours to be elected with approval of the adviser.

FIFTH YEAR

Two subjects of the four required in the fourth year.....8 hours

Ten hours a week throughout the year, from any of the courses related to the previous year's work in the College of Agriculture.

ARTS-HORTICULTURE

FIRST YEAR

English	(101) 2	English	(104) 2
Chemistry	(105 or 109) 4	Chemistry	(106 or 110) 4
Modern Language	4	Modern Language	4
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
American, European or		American, European or	
Industrial History	3	Industrial History	3
Military Science	1	Military Science	1
Physical Education	1	Physical Education	1
Physical Education	(100) 1		
Hygiene			

SECOND YEAR

English	(141 or 145) 3	English	(133) 3
Mathematics	3	Mathematics	3
Botany	(101) 3	Botany	(102) 3
or		or	
Zoology	(101) 3	Zoology	(102) 3
Engineering Drawing	(125) 2	Art	(131) 2
Modern Language	4	Modern Language	4
Military Science	1	Military Science	1

THIRD YEAR

First Semester			Second Semester		
Economics	(101)	3	Economics	(102)	3
Physics	(103 or 105)	4	Physics	(104 or 106)	4
Geology	(103)	3	Geology	(104)	3
Entomology	(107)	3	Entomology	(108)	3
or			or		
Botany	(125)	4	Botany	(126)	4

Elective 3 or 4 hours the year on approval of adviser of the College of Arts, Philosophy, and Science.

FOURTH YEAR

Two courses in Horticulture (4 hours each, throughout the year).

Agricultural Chemistry (5 hours throughout the year).

In addition to these, six hours elective throughout the year, with the approval of the Department of Horticulture.

FIFTH YEAR

Eighteen hours throughout the year which must include such of the following subjects not previously taken, and with the approval of the Department of Horticulture:

Horticulture	(105 and 106)	4
Pomology		
Botany	(125 and 126)	4
Entomology	(107 and 108)	3
Rural Economics	(103 and 104)	3 or 4

NOTE—The first three years of the Arts-Horticulture course shall be identical with the first three years of the Arts-Agriculture course except that in the third year a choice of either Entomology 107-108 or Botany 125-126 is added to the requirement and the electives reduced from six or seven hours throughout the year to three or four hours throughout the year.

ARTS-HOME ECONOMICS

FIRST YEAR

Chemistry	(105 or 109)	4	Chemistry	(106 or 110)	4
English	(101)	2	English	(104)	2
French or German		4	French or German		4
American History	(101)	3	American History	(102)	3
or			or		
European History	(101)	3	European History	(102)	3
Zoology	(101)	3	Zoology	(102)	3
or			or		
Botany	(101)	3	Botany	(102)	3
Physical Education	(131)	1	Physical Education	(132)	1
Physical Education	(100)	1			
Hygiene					

SECOND YEAR

First Semester		Second Semester	
Chemistry	(127) 4	Agricultural Chemistry	(123) 4
Physiology	(101) 3	Physiology	(102) 3
French or German	4	French or German	4
Art	(119) 1	Home Economics	(112) 2
Home Economics	(111) 2	Textiles	
Textiles		Engineering Drawing	(128) 1½
Engineering Drawing	(127) 1½	Physical Education	(134) 1
Physical Education	(133) 1		

THIRD YEAR

Economics	(101) 3	Economics	(102) 3
Home Economics	(101) 5	Home Economics	(102) 5
Foods		Foods	
Bacteriology	(107) 4	Home Economics	(104) 3
English	(141 or 145) 3	Sanitation	
Art	(131) 2	English	(133) 3
		Art	(141) 2

FOURTH YEAR

Agricultural Chemistry	(124) 4	Home Economics	(110) 4
Psychology	(101) 3	Dietetics	
Sociology	(101) 3	Psychology	(102) 3
Home Economics	(118) 3	Sociology	(102) 3
The House		Home Economics	(119) 4
Elective	3	Household Management	
		Elective	3

FIFTH YEAR

Home Economics	(105) 2	History of Education	(102) 3
Proseminary		Elective	12
History of Education	(101) 3		
Elective	9		

Suggested Electives

Home Economics 113 (3), 116 (3), 121 (3).

Economics 120 (3).

Sociology 107 (3).

Agricultural Chemistry 121 (3-5)—122 (3-5), 125 (4)—126 (4).

Chemistry 151-152 (2—2), 153-154 (2 or 3—2 or 3).

Philosophy 115 (2)—116 (2).

Greek 115 (2)—116 (2).

Physiology 106 (4).

SHORT COURSES

The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements of the four-year curricula.

The three-year courses extend through three years of five months each, beginning the Tuesday following the 15th day of October, and closing the Friday preceding the 19th day of March. The courses are complete in themselves and do not offer preparation for any of the four-year curricula, nor will they be accredited toward a degree on any of these curricula.

Candidates who expect to enter this course must obtain from the Entrance Board by mail an application blank for admission. This blank should be filled and sent to the Entrance Board previous to the opening of the term.

THREE-YEAR SHORT COURSE IN AGRICULTURE

		FIRST YEAR			
First Term				Second Term	
Agricultural Chemistry	(51) 5	Soils	(54) 5		
Animal Husbandry	(51) 4	Animal Husbandry	(52) 4		
Agricultural Engineering	(51) 4	Dairying	(52) 3		
English	(91) 2	English	(92) 2		
Shopwork	(51) 2	Shopwork	(52) 2		
Military Science	1	Military Science	1		
Physical Education	1	Physical Education	1		
Physical Education	(100) 1	Physical Education	(100) 1		
Hygiene		Hygiene			

		SECOND YEAR			
Horticulture	(53) 4	Horticulture	(54) 4		
Dairying	(53) 3	Agricultural Engineering	(52) 4		
Rural Economics	(51) 4	Animal Husbandry	(54) 4		
Farm Crops	(51) 4	Farm Crops	(52) 4		
Military Science	1	Military Science	1		
Physical Education	1	Physical Education	1		

Farm Projects to be carried during the summer vacation.

THIRD YEAR			
First Term		Second Term	
Rural Economics	(52) 4	Agricultural Engineering	(54) 4
Animal Husbandry	(57) 4	Animal Husbandry	(56) 4
Military Science	1	Military Science	1

Choice of at least 7 hours from each group below:

Poultry Husbandry	(59) 3	Poultry Husbandry	(60) 3
Veterinary Medicine	(51) 3	Veterinary Medicine	(52) 3
Horticulture	(55) 4	Horticulture	(56) 4
Bacteriology	(51) 4	Entomology	(52) 4
Agricultural Engineering	(53) 3	Dairying	(56) 3
Animal Husbandry	(53) 4	Horticulture	(58) 4
Horticulture	(57) 4	Horticulture	(60) 4
Botany	(91) 4	Rural Economics	(54) 4
Rural Economics	(53) 4	Dairying	(58) 3
Dairying	(57) 3		
Horticulture	(67) 4		
Entomology	(51) 4		
Dairying	(55) 3		

THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR			
Agricultural Chemistry	(51) 5	Soils	(54) 5
Horticulture	(51) 4	Horticulture	(52) 4
Horticulture	(53) 4	Horticulture	(54) 4
English	(91) 2	English	(92) 2
Shopwork	(51) 2	Shopwork	(52) 2
Military Science	1	Military Science	1
Physical Education	1	Physical Education	1
Physical Education	(100) 1	Physical Education	(100) 1
Hygiene		Hygiene	

SECOND YEAR			
Entomology	(51) 4	Entomology	(52) 4
Horticulture	(55) 4	Horticulture	(56) 4
Dairying	(52) 3	Dairying	(53) 3
Military Science	1	Military Science	1
Physical Education	1	Physical Education	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR			
Horticulture	(57) 4	Horticulture	(58) 4
Horticulture	(67) 4	Horticulture	(60) 4
Rural Economics	(51) 4	Rural Economics	(52) 4
Military Science	1	Military Science	1
Elective	6	Elective	6

ELECTIVES

First Term			Second Term	
Poultry Husbandry	(59)	3	Poultry Husbandry	(60) 3
Bacteriology	(51)	4	Dairying	(56) 3
Dairying	(57)	3	Dairying	(58) 3
Animal Husbandry	(51)	4	Animal Husbandry	(52) 4
Horticulture	(59)	4	Horticulture	(66) 4
Horticulture	(65)	4		
Dairying	(55)	3		

WINTER COURSES

AGRICULTURE

The eight-weeks Winter Course in Agriculture, beginning the first Monday in January, has been established to meet the demands of those Ohio farmers who are unable to avail themselves of the other courses in Agriculture offered by the University. There is a large number of young men located on the farms of our State, who are so situated that it is impossible for them to be absent from their homes during the nine months of the college year but yet desire some training in the principles of agriculture. On other farms are found mature men, who are past the usual school age but are ambitious to become familiar with the most recent agricultural thought and practices.

This course offers to such men an opportunity to become familiar with the results of the latest investigations in research and their practical application to work on the farm.

DAIRYING

The work in Dairying is divided into two courses of four weeks each. The first course, "Farm Dairying and Advanced Registry," beginning January 2nd, 1922, and ending January 27th, 1922, will be given to meet the demand of those who wish to receive training in the formation of a dairy herd, the care, feeding, and breeding of the herd, the production of milk, and the preparation of cows for the Advanced Registry. The course is also a preparation for the State Civil Service examination given for the supervisors of the Advanced Registry.

The second course, "Dairy Manufacturers," begins January 30th, 1922, and ends February 24th, 1922. This course has

been established to meet the demand for a practical course of training in marketing milk and its products, the manufacture of butter, cheese, and ice cream. This course is intended for those who are unable to avail themselves of the advantages offered by the longer courses given in this department and is given at a time of the year when the butter-makers, cheese-makers, ice cream-makers, and milkmen can best leave their work.

Those interested in both courses may take the entire eight weeks course, without duplication.

POULTRY HUSBANDRY

An eight-weeks course in Poultry Husbandry, covering the most important features of poultry breeding and feeding, is offered during the same period as the course in Agriculture.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

Office, 203 Townshend Hall

PROFESSORS VIVIAN, LYMAN, AND BEAR, ASSISTANT PROFESSORS
PHILLIPS AND WATSON, MR. McCLURE, MR. CONREY,
AND DEPARTMENT ASSISTANTS

AGRICULTURAL CHEMISTRY

Students expecting to major in Agricultural Chemistry and Soils are requested to interview Professors Lyman and Bear concerning election of courses in this and related departments.

103. General Agricultural Chemistry. Three credit hours. First semester. Two lectures and quiz each week. Four year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. Mr. Phillips.

An introductory course in organic chemistry and its applications to plant and animal life.

101. General Agricultural Chemistry Laboratory. Two credit hours. First semester. Two laboratory periods each week. Four year courses in Agriculture and Horticulture. Prerequisite, Chemistry 106 or 110. To be preceded or accompanied by Agricultural Chemistry 103. Mr. Almy.

Elementary quantitative analysis and some of its applications to agriculture.

115. General Agricultural Chemistry. One credit hour. First semester. One lecture each week. Prerequisite, a satisfactory course in organic chemistry. Mr. Phillips.

Lectures on the application of chemistry to plant and animal life. This course is intended for students who have had satisfactory preparation in organic chemistry, and for such students it takes the place of Course 103 as a requirement. Students who have had work in quantitative analysis should consult with the department before registering for any of these courses.

123-124. Household Chemistry. Three credit hours, first semester; four credit hours, second semester. Two laboratory periods each week throughout the year. One lecture each week,

first semester; two lectures each week, second semester. Home Economics, second year. Prerequisite or concurrent, Chemistry 127-128. Mr. Lyman, Miss Edgar.

Lectures on the applications of chemistry to household affairs, particularly to human nutrition. Laboratory work consists of a brief introduction to quantitative analysis, followed by the analysis of foods, a study of the foodstuffs and their digestive changes.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

107-108. Dairy Chemistry. Three to five credit hours. The year. Prerequisites, two years of chemistry including Agricultural Chemistry 103 and 101. Mr. Lyman.

Lectures on the composition of milk and its products; fermentation, digestion, and decomposition of milk. Laboratory practice on the complete analysis of milk, butter, and cheese; determination of the chemical and physical constants of butter fat; determination of the different proteins of milk and a study of their cleavage products; effect of treatment of dairy products on their chemical composition as shown by analysis, etc. Intended for students specializing in Dairying and should be accompanied or preceded by a course in Dairying.

***111-112. Animal Nutrition.** Two to four credit hours. The year. Two lectures and two laboratory periods each week. Prerequisites, Agricultural Chemistry 103 and 101 or equivalent, and Animal Husbandry 137. (Animal Husbandry 137 may be taken concurrently.) Given biennially. Mr. Lyman.

A chemical study of food constituents, their digestion and effect on the body. A discussion of problems in growth, maintenance and fattening of animals. The study of complex feeds, such as are used on the farm, from the standpoint of the more recent conceptions of animal nutrition. Laboratory work includes the separation and study of food nutrients, the determination of coefficients of digestibility, and the effect of selected rations on animals. The lectures may be taken alone for two credit hours.

***113. Chemistry of Insecticides and Fungicides.** Two credit hours. Second semester. One lecture and one laboratory period

*Not given in 1921-1922.

each week. Prerequisites, Agricultural Chemistry 103 and 101 or equivalent, and the consent of the instructor. Given biennially. Mr. Phillips.

A study of the materials used as insecticides and fungicides, their preparation and properties.

114. Plant Chemistry. Two credit hours. Second semester. Two lectures each week. Prerequisites, two years of Chemistry including Agricultural Chemistry 103 and 101 or equivalent in organic chemistry and quantitative analysis. Mr. Phillips.

Lectures will be given on the chemistry of plant constituents, plant metabolism and a few selected plant products.

116. Plant Chemistry. Two credit hours. Second semester. Six hours laboratory work each week. To be preceded or accompanied by Agricultural Chemistry 114. Mr. Phillips.

Work will be done along the lines of detection, determination and separation of plant constituents.

121-122. Food Inspection and Analysis. Three to five credit hours. The year. Prerequisites, Agricultural Chemistry 103 and 101 or equivalent. Given biennially. Mr. Lyman.

Lectures on the composition of foods and food adulteration. Laboratory practice embraces the analysis of foods, tea, coffee, syrups, spices, condiments, flavoring extracts, baking powder, vinegars, distilled beverages, fermented beverages, fats and oils, etc., and the examination of the same for adulteration. This course is designed to prepare for the analytical work connected with the state control of the sale of food stuffs, etc.

125-126. Chemistry of Food and Nutrition. Four credit hours. The year. Prerequisites, general and organic chemistry. Mr. Lyman.

A study of food principles, proteins, fats, and carbohydrates. The composition of the various tissues, secretions and excretions of the body; the chemistry of digestion, the food requirements of the human body; effect of selected diet on metabolism. Laboratory work in preparation of food principles and a study of their chemical behavior.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Application of Chemistry to Agriculture. Five credit hours. First term.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

152. Elementary Soils. Three credit hours. Second semester. Two lectures and one quiz each week. Four year courses in Agriculture and Horticulture. Prerequisite, Agricultural Chemistry 103. Mr. Bear and Mr. Vivian.

An introductory course on the origin and the chemical and physical properties of the soil, their management and fertilization.

150. Elementary Soils. Two credit hours. Second semester. Six hours laboratory or field work each week. Prerequisite or concurrent, Soils 152. Mr. McClure, Mr. Conrey, Mr. Thrash, and department assistants.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

153. Soil Fertility. Three credit hours. First semester. Prerequisites, Soils 152 and 150. Mr. Bear.

Lectures and references reviewing investigational work which has been and is now being conducted on some of the more important fertility problems.

155. Chemical Analysis of Soils. Five credit hours. First semester. Two lectures and three laboratory periods each week. Prerequisites, Soils 152 and permission of the instructor. Mr. Bear, Mr. McClure.

A study of the methods in the quantitative chemical analysis of soils.

157. Origin and Classification of Soils. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisites, Soils 152 and 150. Mr. Conrey.

A study of the soils of Ohio. Laboratory work will include practice in soil surveying. Field trips will be made, including a trip to the experimental farms at Wooster, and to several sub-station farms.

158. Soil Physics. Three credit hours. First semester. One lecture and two laboratory periods each week. Prerequisites, Soils 152 and 150, and permission of the instructor. Mr. Conrey.

The application of the principles of physical chemistry to the study of soil problems.

162. Chemistry of Fertilizers. Four credit hours. Second semester. Two lectures and two laboratory periods each week. Prerequisites, Soils 152 and 150, and permission of the instructor. Mr. Bear, Mr. McClure.

Lectures on the processes of fertilizer manufacture and control. The laboratory work will include visits to various fertilizer plants, the chemical examination of the various fertilizing materials and practice in routine fertilizer analysis.

FOR GRADUATES

201-202. Research Work in Soils.

203-204. Soil Seminary.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

54. Elementary Soils. Five credit hours. Second term. Mr. Bear, Mr. Vivian.

Lectures and recitations on the management and fertilization of soils for high crop yields.

AGRICULTURAL EDUCATION

Office, 103 Townshend Hall

PROFESSOR STEWART, ASSISTANT PROFESSORS FIFE AND
McMILLEN, MR. NISONGER

101-102. Teaching of Vocational Agriculture in Secondary Schools. Three credit hours. The year. Three lectures

each week. Open to Juniors and Seniors who have obtained the consent of the department. Mr. Stewart.

101 is given also during the second semester.

The course of study, its essentials and its provisions for adaptation to local conditions; laboratory work, home projects, and illustrated material in their relation to classroom instruction; textbooks and library reference books in agriculture that meet the needs of secondary schools; the teacher of agriculture as a factor in community life.

103-104. Practice Teaching of Agriculture in Secondary Schools. Three credit hours. The year. Prerequisite, Agricultural Education 101 or Agricultural Education 101 concurrent with 103.

Observation and practice teaching of secondary agriculture in nearby cooperating rural high schools will be given under the supervision of critic teachers. Classroom instruction, laboratory exercises and home projects as conducted in these schools will receive emphasis.

AGRICULTURAL ENGINEERING

Office, 201 Machinery Laboratory

PROFESSORS IVES AND McCUEN, ASSISTANT PROFESSORS
POTTER AND THOMSON

101. Farm Engineering. Four credit hours. Either semester. Prerequisites, Engineering Drawing 125, Mathematics 107 and Physics 109. All instructors.

This course must be taken by all students who are held for a semester's work in Agricultural Engineering.

Lectures and recitations on the laying out and equipment of the farm, and a detailed study of farm power, water supply, and farm machinery. Practice in the comparison and testing of farm machines, handling concrete, rope splicing, and in the working out of problems in farm mechanics.

103. Farm Structures. Three credit hours. Either semester. Prerequisites, Engineering Drawing 125 and Mathematics 107. Mr. Ives.

Lectures covering the properties of materials used in the construction of farm buildings; timber, building tile, brick, cement blocks, etc. Relative cost of buildings from different

materials; the decay of timber, its cause and prevention; composition of paints and varnishes, how to mix and apply; principles and methods of ventilation. Drawing-room work in designing farm structures and estimating cost of same.

106. Drainage. Three credit hours. Second semester. Prerequisites, Mathematics 107 and Soils 152. Mr. Potter.

Lectures and recitations, covering (a) leveling and surveying instruments, their construction and use; (b) tile drainage, the comparative cost of different systems; size of tile, depth and distance apart. Field work in differential leveling, laying out drainage systems, and obtaining areas by chain and transit.

110. Advanced Farm Machinery. Three credit hours. First semester. Prerequisite, Agricultural Engineering 107. Mr. McCuen.

A detailed study of the construction of field and power machinery. Practice in assembling and disassembling some of the machines studied, together with problems and tests covering various features of design and operation.

107. Farm Power. Four credit hours. Second semester. Prerequisite, Agricultural Engineering 101. Mr. McCuen.

Lectures and laboratory covering various phases of farm power including gasoline and oil engines, tractors, steam engines, windmills and electric power.

115. Household Mechanics. Two credit hours. First semester. Six laboratory hours each week. Mr. Potter.

This course is designed for girls taking Home Economics courses.

Laboratory exercises and instruction are given on soldering, pipe fitting, electrical connections and wiring, belt lacing, rope splicing, painting, use of tools and tool sharpening, cementing and glueing, meter reading, etc.

116. Household Equipment. Three credit hours. Second semester. Two lectures, three laboratory hours each week. Mr. Potter.

This course is designed for Home Economics students and others interested in the mechanical equipment of the home and should be preceded by Agricultural Engineering 115.

Lectures will be given on the construction, care, and operation of the various types of laundry equipment, irons, cleaning devices, electrical appliances, plumbing fixtures, pumps, water supply systems, lighting plants, small gas engines, etc.

Laboratory work in the adjustment and operation of these devices.

117. Dairy Mechanics. One credit hour. First semester. Prerequisites, Agricultural Engineering 101 and permission of the instructor. Concurrent with Dairying 111. Mr. McCuen.

Laboratory work in pipe fitting, belt lacing, soldering, and babbiting, construction and operation of steam boilers, steam and gas engines, pumps, etc.

118. Field Machinery. Three credit hours. Second semester. Six laboratory hours each week. Prerequisite, Agricultural Engineering 101. Mr. Thomson.

Lecture, quiz and laboratory exercises covering the various field machines used on the farm, such as tillage, seeding, harvesting, and belt driven machinery.

Laboratory work to consist of written reports of detailed study and tests of the machines.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

111-112. Special Problems. Two to five credit hours. The year. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Ives, Mr. McCuen, Mr. Potter, Mr. Thomson.

These courses are designed to fill the needs of students desiring to work out special problems along some line of agricultural engineering. Work may be chosen pertaining to farm structures, drainage, farm power, concrete construction, or field machinery.

FOR SHORT COURSES ONLY

51. Farm Structures. Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy

barns, hog houses, farm residences, etc.; water supply and lighting systems.

52. Farm Machinery. Four credit hours. Either term. Mr. Thomson.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines.

53. Concrete Construction. Three credit hours. First term. Mr. Thomson.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil and steam engines, tractors, and windmills.

AGRICULTURAL EXTENSION

Office, 115 Townshend Hall

PROFESSOR RAMSOWER

102. Extension Methods. Two credit hours. Second semester. Two recitations each week. Open only to Seniors in the College of Agriculture. Mr. Ramsower.

An introduction to extension methods and a discussion of the forms of organization for carrying on extension work.

AMERICAN HISTORY

Office, 207 University Hall

PROFESSORS G. W. KNIGHT, HOCKETT, AND A. C. COLE, ASSISTANT PROFESSOR WOOD, MR. WITTKKE, MR. ROSEBOOM, MR. RUSSELL

101-102. History of the United States. (1763-1920). Three credit hours. The year. Mr. Knight, Mr. Hockett, Mr. Wood, Mr. Wittke, Mr. Roseboom, Mr. Russell.

American History 101 is given also during the second semester, and American History 102 during the first semester.

This course comprises a study of the history of the United States, in which political, constitutional, and economic phases receive chief attention. The first semester covers the period 1763-1837. The second semester treats the period 1837-1920. Textbook, discussion and collateral readings.

ANATOMY

Office, 105 Biological Building

PROFESSOR LANDACRE, ASSISTANT PROFESSOR BUCK, MR. KNOUFF,
MR. BAKER

Courses in Anatomy, so far as they are open to students in the College of Agriculture, are designed for two classes of students:

(a) Those desiring a general training in vertebrate anatomy should elect courses 101-102 or 103-104. Further electives should be made only after consultation.

(b) Students in Science Nursing and those desiring to specialize in dietetics should select 101 and 116. Course 116 is a study of the human viscera, particularly the digestive system after a preliminary study of one of the higher vertebrates. Course 116 may be taken without 101 when elected by Juniors or Seniors.

101. Comparative Anatomy of the Vertebrates. Three to five credit hours. First semester. One recitation and five to eight laboratory hours each week. Not open to Freshmen. Mr. Baker. Fishes, amphibians and reptiles.

102. Comparative Anatomy of the Vertebrates. Three or five credit hours. Second semester. One recitation and five to eight laboratory hours each week. Elective. Prerequisite, Anatomy 101 or an equivalent. Mr. Baker.

Birds and mammals.

103. Vertebrate Embryology. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to Freshmen. Mr. Landacre.

Karyokinesis and the early development of fishes and amphibians.

104. Vertebrate Embryology. Three to five credit hours. Second semester. One lecture or recitation and five to eight

laboratory hours each week. Not open to Freshmen. Mr. Landacre.

The development of reptiles and birds.

105. Anatomy of the Frog. Three to five credit hours. First semester. One lecture or recitation and five to eight laboratory hours each week. Not open to Freshmen. Mr. Landacre.

The gross anatomy of the frog in addition to the preparation of tissues and organs for study.

106. Anatomy of the Frog. Three to five credit hours. Second semester. One lecture or recitation and five to eight laboratory hours each week. Not open to Freshmen. Mr. Landacre.

The histology and early development of the frog.

116. The Digestive System. Three credit hours. Second semester. One lecture and four laboratory hours each week. Elective for Juniors or Seniors. Prerequisite, one year's work in biological science. Mr. Landacre, Mr. Buck.

A study of the gross and microscopic structure of the digestive system and associated organs in one of the higher mammals and in man.

118. Elementary Comparative Anatomy of Vertebrates. Three to five credit hours. Second semester. One lecture and five to eight laboratory hours each week. Prerequisites, Zoology 101, Physiology 101 or an equivalent. Mr. Landacre, Mr. Knouff, Mr. Baker.

A preliminary study of the comparative anatomy and embryology of the vertebrates accompanied by careful dissection of the shark, frog, and cat.

ANIMAL HUSBANDRY

Office, Judging Pavilion

PROFESSORS GAY, PLUMB, KAYS, AND COFFEY, ASSISTANT PROFESSOR CONKLIN, AND DEPARTMENT ASSISTANTS

135. Elementary Live Stock Judging. Four credit hours. Either semester. Second year. Two lectures and four laboratory hours each week. Mr. Coffey.

Students intending to give much attention to Animal Husbandry courses should take this course the first semester. Students taking but one course in Animal Husbandry are required to take this.

An elementary study of the relationship of form to function in horses, cattle, sheep, and swine.

137. Principles of Feeding. Three credit hours. Either semester. Second year. Prerequisites, Animal Husbandry 135 and agricultural chemistry. Mr. Conklin.

An elementary study of digestion and assimilation, feeding standards, composition of feeding stuffs and feeding practices.

139. Horse Production and Management. Four credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Kays.

A general consideration of the breeds, breeding, feeding, and management of horses.

141. Beef Cattle Production and Management. Four credit hours. First semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Conklin.

A general consideration of the breeds, breeding, feeding, and management of beef cattle.

143. Swine Production and Management. Four credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Coffey.

A general consideration of the breeds, breeding, feeding, and management of swine. Three inspection trips within the State will be required.

145. Dairy Cattle Production and Management. Four credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Conklin.

A general consideration of the breeds, breeding, feeding, and management of dairy cattle.

147. Sheep Production and Management. Four credit hours. Second semester. Third year. Prerequisites, Animal Husbandry 135, 137, and Zoology 115. Mr. Plumb.

A general consideration of the breeds, breeding, feeding, and management of fine-wool and mutton sheep.

151. Advanced Live Stock Judging. Three credit hours. First semester. Fourth year. Prerequisites, Animal Husbandry 135, 139, 141, 143 and 147. Mr. Kays.

An advanced class for Senior students who have had the more elemental instruction in judging. The purpose is to give a more detailed consideration to type and breed conformation, with emphasis on practice in groups and classes.

153. Meats and Meat Products. Three credit hours. Second semester. Prerequisites, Animal Husbandry 135, 141, 147, 143. Permission of the instructor must be obtained. Enrollment is limited to fifteen. Mr. Conklin.

A study of the composition and value of meats; the slaughtering of farm animals and the methods of handling and preparing meats and the by-products of slaughter.

155. Live Stock Markets and Marketing. Three credit hours. First semester. Prerequisites, Animal Husbandry 135 and 137. Mr. Plumb.

The live stock markets, their organization methods and rules; methods of shipment and sale, etc. Considerable library work and investigation is required, and the course is handled after the manner of the seminary.

157. Breeding Farm Animals. Four credit hours. Second semester. Lectures and one laboratory period. Prerequisites, Zoology 101, 102 and 115, and Animal Husbandry 135. Mr. Gay.

Advanced work in heredity, variation, etc., in its application to domestic animals. Special attention will be given to practices associated with breeding farm animals.

163-164. Research and Thesis. Two to five credit hours. The year. For Senior students only, or graduates specializing in Animal Husbandry. Mr. Gay, Mr. Plumb, Mr. Kays, Mr. Coffey.

Students will elect work in desired subjects after conference with the instructor in charge.

Students desiring work in Animal Nutrition, see Agricultural Chemistry 111-112.

132. Types and Breeds of Live Stock. Three credit hours. Second semester. Mr. Kays.

For Veterinary students only. Lectures and recitations upon types and breeds of livestock, more especially horses and cattle, as coming within the field of the veterinary practitioner.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Kays.

Textbook and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Conklin.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Either term. Second year. Mr. Conklin.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Gay.

This is a course for the Short Course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Permission of the instructor must be obtained. Enrollment is limited to twenty. Mr. Coffey.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep and swine will be given consideration.

POULTRY HUSBANDRY

(See page 99)

ARCHITECTURE

Office, 105 Brown Hall

PROFESSORS BRADFORD, CHUBB, AND SMITH, ASSISTANT
PROFESSOR RONAN, MR. HASKETT

131. **Elements of Architecture.** Two credit hours. First semester. Prerequisites, Art 131 and Engineering Drawing 125.

132. **Elements of Architecture.** Two credit hours. Second semester. Prerequisite, Architecture 131.

133. **History of Architecture.** Three credit hours. First semester. Prerequisite, Architecture 132.

136. **History of Architecture.** Three credit hours. Second semester. Prerequisite, Architecture 133.

History of modern architecture.

111. **Photography.** Two credit hours. Either semester. Prerequisite, Chemistry 105-106 or 109-110. Mr. Haskett.

113. **Principles of Architectural Composition.** Two credit hours. First semester. Landscape Architecture, fourth year. Prerequisite, Architecture 133. Mr. Chubb.

ART

Office, 203 Hayes Hall

PROFESSOR KELLEY, ASSISTANT PROFESSOR ROBINSON, MR. NORRIS,
MR. WEBBER, MISS KNAUBER, MISS WILSON

131-132. **Elementary Drawing.** Two credit hours. The year. Four laboratory hours each week. All instructors.

This course is designed to develop a thorough knowledge of forms and values in black and white, also the use of free-hand perspective.

Art 131 is given also during the second semester.

Art 132 is given also during the first semester.

133. **Advanced Drawing.** Two credit hours. Either semester. Four laboratory hours each week. Prerequisite, Art 131-132.

This course is designed to give the student some freedom in the use of drawing as a medium of expression. Drawing from the antique and the costume model.

147. Illustrative Drawing. Two credit hours. First semester. Two two-hour periods. Prerequisite, Art 132. Mr. Norris.

Drawing for reproduction in pen and ink with special reference to architectural and scientific drawing.

136. Water Color Painting. Two credit hours. Either semester. Four laboratory hours each week. Prerequisites, Art 133 and 141.

Painting from still life and costume model. The purpose of this course is to train the color perceptions of the student.

137. Advanced Water Color. Three credit hours. Second semester. Prerequisite, Art 136.

141. Elementary Design. Two credit hours. Either semester. Prerequisites, Art 131 and 119. All instructors.

The principles of the theory and practice of design. Lecture and conference, with outside work.

142. Advanced Design. Three credit hours. Either semester. Prerequisite, Art 136.

Advanced work in organic design, familiarizing the student with professional design requirements.

119. Appreciation of Art. One credit hour. Either semester. Mr. Kelley.

This course is designed to give a critical and appreciative attitude toward art to those who have no technical knowledge of the subject.

121. Costume Design. Two credit hours. Either semester. Prerequisites, Art 131 and 141. Miss Knauber.

Art in design; the direct application of design principles and color harmony to dress.

170. Modeling. Two credit hours. First semester. Prerequisite, Art 131. Laboratory.

The study of form in three dimensions.

171. Advanced Modeling. Three credit hours. Second semester. Prerequisite, Art 170.

This course includes the principles of cast making with a certain amount of practice.

BACTERIOLOGY

Office, 202 Veterinary Laboratory Building

PROFESSORS MORREY AND STARIN, ASSISTANT PROFESSOR
MASTERS, MR. OCKERBLAD, AND DEPARTMENT ASSISTANTS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses in Bacteriology are open to advanced undergraduate and graduate students only, not to Freshmen or Sophomores. The instructor in charge must be consulted before electing.

107. General Bacteriology. Four or five credit hours. First semester. Mr. Morrey, Mrs. Masters, and department assistants.

This course is a prerequisite to all the elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationship of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical bio-chemical actions.

108. Pathogenic Bacteria. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey, Mrs. Masters.

A study of the more important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation; also, in the lectures, ways of transmission and methods of protection against infectious disease; sanitation and the theories of immunity.

110. Dairy Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

112. Soil Bacteriology. Two to five credit hours. Second semester. Prerequisite, Bacteriology 107. Mr. Morrey.

121-122. Advanced Dairy Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 110 or equivalents. Mr. Morrey.

123-124. Advanced Soil Bacteriology. Three to five credit hours. The year. Prerequisites, Bacteriology 107 and 112 or equivalents. Mr. Morrey.

FOR GRADUATES

201-202. Research in Pathogenic Bacteriology.

203-204. Research in Agricultural Bacteriology.

FOR SHORT COURSES ONLY

51. General Bacteriology. Four credit hours. First term.

This work is designed especially for Short Course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BIBLIOGRAPHY

Office, The Library

MISS JONES, MR. REEDER

102. The Library and the School. One credit hour. Second semester. Miss Jones.

Lectures, readings, and problems on the use of books, with special reference to methods of teaching secondary school students how to make use of a library. Such practice work in technical library methods as will enable a teacher to take charge of a collection of books in a school building.

103. Agricultural Bibliography. One-half credit hour. First semester. Miss Jones, Mr. Reeder.

This course consists of lectures and problems on the use of reference books, indexes, catalogs, and the publications of the United States Department of Agriculture and of the state experiment stations. It also includes the making of a short bibliography.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS TRANSEAU AND SCHAFFNER, ASSISTANT PROFESSORS
STOVER, SAMPSON, AND WALLER, MR. TIFFANY,
MR. SAYRE, AND DEPARTMENT ASSISTANTS

101-102. General Botany. Three credit hours. The year. Two recitations and two laboratory hours each week. Mr. Sampson, Mr. Waller, Mr. Tiffany, Mr. Sayre, Mr. E. L. Stover.

A study of structure, growth, nutritive processes and water relations of the vegetative body of plants, and the relation of plants to their environments—during the first semester.

A study of the reproduction, heredity, and evolution of plants; the nutrition and reproduction of bacteria and fungi in relation to plant diseases and sanitation; a brief survey of the great plant groups, and the classification of some of the common plants of Ohio—during the second semester.

107. Plant Micro-technique. Three credit hours. First semester. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102.

An introduction to the technique of microscopic preparations, fixing, section cutting, mounting, and staining.

108. Plant Anatomy. Three credit hours. Second semester. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102.

A study of the structure and development of tissue systems and their relation to environmental factors.

116. Plant Pathology. Three credit hours. Second semester. One lecture and four laboratory hours each week. Prerequisite, Botany 101-102. Mr. Stover.

Representative bacterial and fungus diseases of the principal agricultural crops are studied in the laboratory. In the lectures, consideration is given to the nature, symptoms, and control of plant diseases and the classification and life-histories of causal organisms.

119-120. Local Flora. Three credit hours. The year. Six laboratory hours each week. Prerequisite, Botany 101-102. Mr. Tiffany.

Field and laboratory study of the local flora. Practice in the identification of plants belonging to all of the great groups. Either course may be elected separately.

123. Morphology of Lower Plants. Four credit hours. First semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102.

A study of the evolution and life histories of the more important groups of algae, fungi, and bryophytes.

124. Morphology of Vascular Plants. Four credit hours. Second semester. Two lectures and four laboratory hours each week. Prerequisite, Botany 101-102.

A study of the evolution and life histories of the more important groups of ferns and seed plants.

125-126. Plant Physiology. Four credit hours. The year. Lectures and laboratory. Prerequisite, Botany 101-102. Mr. Transeau.

An experimental study of plant processes and the relation of these processes to environmental factors. Desirable antecedent, elementary organic chemistry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

These courses are not open to Freshmen and Sophomores.

117-118. Plant Ecology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisites, Botany 101-102 and one additional year of some biological subject. Mr. Transeau.

The ecological relations of the forests, prairies and deserts of North America. Field work on the local plant associations.

121. Plant Genetics. Three credit hours. First semester. One lecture and two laboratory hours each week. Prerequisites, Botany 101-102 and one additional year of some biological subject. Mr. Schaffner.

In this course the principles and methods of plant genetics are considered, including a study of fertilization and reproduction, hybridization, heredity, Mendelian laws, fluctuations and mutations.

127-128. Plant Pathology. Four credit hours. The year. Two lectures and four laboratory hours each week. Prerequisites, Botany 101-102 and one additional year of some biological subject. Mr. Stover.

The course includes a study of the nature, symptoms, classification and course of plant diseases, their relations to environmental conditions; the diseases of particular crop plants and the methods of control; the classification and life histories of parasitic plants.

In the laboratory attention is given to the preparation of culture media, the isolation and culture of plant pathogens, the inoculation of plants followed by a study of the progress of the disease, and the preparation and use of preventive materials. A number of plant diseases are studied both in the laboratory and the field.

133-134. Minor Investigations. Three to five credit hours. The year. Prerequisites, Botany 101-102 and one additional year of some biological subject. Mr. Transeau, Mr. Schaffner, Mr. Stover, Mr. Sampson, Mr. Waller, Mr. Sayre.

139-140. Advanced Plant Pathology. Three credit hours. The year. One lecture and four laboratory hours each week. Prerequisite, Botany 127-128. Mr. Stover.

151-152. Plant Micro-Chemistry. Three credit hours. The year. One lecture and four laboratory hours each week. Elective. Prerequisite, Botany 125-126. Mr. Sampson.

A study of the chemical substances occurring in plant cells and the chemical changes accompanying plant processes and plant responses.

155. Economic Botany. Three credit hours. First semester. Two lectures and two laboratory hours each week. Elective. Prerequisites, Botany 101-102 and one additional year of biological work. Mr. Waller.

Important economic plants of the world studied with reference to their geographic distribution, commercial importance and uses. A summary of the centers of crop production in relation to natural centers of vegetation, environmental, economic, and other conditions.

FOR GRADUATES

201-202. Research in Systematic Botany.

203-204. Research in Morphology and Cytology.

205-206. Research in Physiology, Ecology, and Economics.

207-208. Research in Mycology and Plant Pathology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

CHEMISTRY

Office, 100 Chemistry Building

PROFESSORS McPHERSON, FOULK, HENDERSON, EVANS, AND WITHROW, ASSISTANT PROFESSORS BOORD, HOLLINGSWORTH, MACK, AND FRANCE, MR. VILBRANDT, AND DEPARTMENT ASSISTANTS

105. Elementary Chemistry. Four credit hours. First semester. One lecture, one quiz, and six laboratory hours each week. No prerequisite. Mr. Evans and department assistants.

An introductory course in the chemistry of the non-metals arranged for students who have not offered chemistry as a unit for admission to the University. This course is to be followed by Chemistry 106 in the second semester.

106. Elementary Chemistry and Qualitative Analysis. Four credit hours. Second semester. One lecture, one quiz, and six laboratory hours each week. Prerequisite, Chemistry 105. Mr. Evans and department assistants.

An introductory course in the chemistry of the metals, the laboratory work constituting an elementary course in qualitative analysis.

109. General Chemistry. Four credit hours. First semester. One lecture, one quiz, and six laboratory hours each week. Prerequisite, one unit of chemistry offered for admission to the University. Mr. Evans and department assistants.

A general course in the chemistry of the non-metals arranged for students who have had a satisfactory course in chemistry in the secondary schools. This course is to be followed by Chemistry 110 in the second semester.

110. General Chemistry and Qualitative Analysis. Four credit hours. Second semester. One lecture, one quiz, and six laboratory hours each week. Prerequisite, Chemistry 109. Mr. Evans and department assistants.

A general course in the chemistry of metals, the laboratory work constituting an introductory course in qualitative analysis.

113-114. Advanced General Chemistry. Two credit hours. The year. One lecture and one quiz each week. Prerequisite, Chemistry 106 or 110. Mr. Henderson.

This course is arranged for all students who decide to continue chemistry beyond the first year. It consists of a review of the more difficult topics of the first year courses, together with the development of other topics not taken up in those courses. It should be accompanied by quantitative analysis or some other laboratory course.

127-128. Organic Chemistry (Home Economics). Two credit hours, first semester; one credit hour, second semester. Prerequisite, Chemistry 106 or 110. Mr. McPherson.

This is a general introductory course in organic chemistry arranged with special reference to the needs of students in Home Economics and in related subjects.

136. The Reading of Chemical Literature. Two credit hours. Second semester. Prerequisite, one year of German. Mr. Foulk.

The object of this course is to afford practice in the rapid reading of German chemical literature, the selections being made with special reference to the technical terms of the science.

151-152. Organic Chemistry. Two credit hours. The year. Two lectures each week. Prerequisites, Chemistry 114 and 120. Mr. McPherson.

This is the fundamental course in organic chemistry arranged for all students expecting to specialize in chemistry. The laboratory work is described under the following course numbers.

153-154. Organic Chemistry (Laboratory). Two or three credit hours. The year. Six or nine laboratory hours each week. Prerequisite or concurrent courses, Chemistry 151-152. Mr. Boord and assistants.

This course comprises the laboratory work naturally belonging with courses 151-152, and should in general accompany these courses. It consists of the preparation of a series of typical organic compounds, and a study of their properties.

164. Physical Chemistry. Two credit hours. Second semester. Two lectures with lecture table demonstrations of experiments illustrating the application of the methods of physical chemistry to the problems of biochemistry. Prerequisites, Chemistry 105, 106, or 109, 110, Organic Chemistry 150. Mr. Mack.

The course will include a brief study of gases, solutions, osmosis, electrolytic equilibrium, rate of chemical reaction, catalysis, and colloid chemistry with frequent references to physiological processes.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

171. Chemical Bibliography. One credit hour. First semester. Lecture, quiz, and library practice. Prerequisite, twenty-six credit hours of chemistry. Mr. Boord.

Designed to train the advanced student in the use of the chemical library and instruct him in the character of the various journals, dictionaries, handbooks, and tables there available. The use of the abstract journals is especially emphasized.

173. Chemical Biography. One credit hour. First semester. Two lecture recitations each week. Prerequisites, Chemistry 113-114, 119-120, 151-152. Mr. Henderson.

Designed to familiarize advanced undergraduate students with the leading personages in chemistry, particularly in recent and contemporary times.

CIVIL ENGINEERING

Office, 108 Brown Hall

PROFESSOR ENO, MR. MILLER

131. **Surveying.** Five credit hours. First semester. Landscape Architecture, second year. Prerequisites, Mathematics 107 and Engineering Drawing 125. Mr. Miller.

133. **Sanitation, Drainage, Water Supply.** One credit hour. First semester. One lecture each week and collateral reading. Landscape Architecture, third year. Prerequisite, Civil Engineering 131. Mr. Eno.

The elementary principles of residential, institutional, and small community sanitation and water supply, and road and ground drainage problems.

DAIRYING

Office, 111 Townshend Hall

PROFESSOR ERF, ASSISTANT PROFESSOR STOLTZ, MR. DRAIN,
AND DEPARTMENT ASSISTANTS

101. **Principles of Dairying.** Four credit hours. Either semester. Prerequisite to all other courses in Dairying. Mr. Erf, Mr. Drain.

Lectures will be given on the relation of dairying to general agriculture; the composition of dairy products and the laws governing them; the secretion of milk and the testing of milk for butter fat; the formation of profitable herds; testing individual cows and herds for butter fat; entering and testing cows for Advanced Registries. In the laboratory, practical work will be given in the testing of milk and dairy products, and testing dairy herds for butter-fat production.

102. **Farm Dairying.** Four credit hours. Second semester. Prerequisite, Dairying 101. Mr. Erf, Mr. Stoltz.

Lectures will be given on the feeding and care of dairy cows as related to the economical production of milk; the handling and manufacture of dairy products for the market; practice in operating farm cream-separators; the care of milk and cream; farm butter-making and farm cheese-making; plumbing and

soldering as needed in dairy operations will be given in the laboratory.

103. City Milk Supply. Two to four credit hours. Second semester. Prerequisites, Dairying 101 and Bacteriology 107. Mr. Drain.

This includes lectures and practical work on the handling and distributing of milk for city trade, including milking and the cooling, clarifying, pasteurizing, standardizing, and bottling of milk and cream; the testing of milk for butter-fat and total solids; methods of determining the bacterial count and leucocytes in milk, in order to comply with the rules laid down by the various city ordinances.

105. Buttermaking. Four credit hours. Either semester. Prerequisite, Dairying 101. Mr. Kochheiser.

In the lecture room the principles of buttermaking, including cream separation, churning, packing, and marketing of butter and the development of pure cultures, will be thoroughly discussed. In the laboratory the work discussed in the lecture room will be put into practice.

107. Cheesemaking. Three credit hours. Either semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, Limburger, club, cream, Neufchatel, cottage, pimento, and camembert cheeses. Practical work will be given in the manufacture of both hard and soft cheese from the surplus milk of plants, and of fancy cheeses from farm dairies.

110. Ice Cream Making. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures will be given on the theory and practice of ice cream making. Laboratory work will consist of making ice cream and other frozen products.

111. Dairy Mechanics. One credit hour. First semester. Prerequisites, Dairying 101 and permission of the instructor. Concurrent with Agricultural Engineering 117. Mr. Kochheiser.

Lecture work will be given on the construction and operation of refrigerating machinery, milk bottle fillers and cappers,

churns, ice cream freezers, pasteurizers, emulsifiers, power separators, and homogenizers.

It is intended to train the students who are specializing in dairy manufacturing to understand the machinery used in the dairy manufacturing industry.

115. Dairy Buildings. Two credit hours. First semester. Prerequisite, Dairying 101. Mr. Erf.

This course consists of a description of the construction of dairy buildings to conform to the sanitary score card and sanitary regulations. The practical information from a bacteriological standpoint taking into consideration the building of dairy barns, the stabling of cows, storing of feeds, water supply, sewage disposal, manure disposal, building of ice houses, dairy houses, creameries, cheese factories, milk condensories, and refrigerating plants. Must be followed by Agricultural Engineering 103.

116. Milk Condensing. Two credit hours. Second semester. Prerequisite, Dairying 101. Mr. Stoltz.

Lectures will be given on the theory and practice of milk condensation. In the laboratory, practical work will be given with vacuum-pans and sterilizers.

121. Dairy Herd Management. Nine credit hours. Either semester. Prerequisites, Dairying 101-102, and permission of the instructor. May be scheduled only by men doing Cow Testing Association work. Mr. Erf.

The work of the course includes visiting not less than twenty herds for at least eight consecutive months. During these visits the milk of each cow is weighed and tested for fat and total solids, weighing feeds and calculating the cost, selecting profitable feeds, calculating feed costs, labor costs and determining other items of expense in order to arrive at the profit or loss of each cow in the herd. Suggestions for increased profits and improving the sanitary conditions must be incorporated in a monthly report.

119-120. Proseminary. One credit hour. The year. Prerequisite, Dairying 101.

Seminary on assigned readings in Experiment Station and other dairy literature will be assigned in these courses.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

113-114. Advanced Dairying. Two to five credit hours. The year. Prerequisite, Dairying 101. Mr. Erf.

Two lines of work are offered in this course:

First, **Economic Dairying**—This consists of visiting ten dairy farms and determining the profit and loss of these farms. A complete description of each farm is required, and suggestions as to improvements and methods used.

Second, **Investigational Work**—This consists of working out some practical problem along dairy lines. When work is done in the laboratory, a fee will be charged.

125. Special Problems in Dairy Manufacturing Practice. Two to five credit hours. Either semester. Prerequisites, Dairying 101 and permission of the instructor. Mr. Stoltz.

This course is designed to fill the needs of students majoring in dairy manufacturing, desiring to take up special problems along some line in dairy manufacturing.

FOR GRADUATES

201-202. Advanced Dairying.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz and one laboratory period each week. First year, Three-year Course in Agriculture. Mr. Drain.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skimmilk, buttermilk, and cream for butter-fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Drain.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical pro-

duction of milk; feeding and testing individual cows and herds for butter-fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

55. Farm Cheesemaking. Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage, and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Buttermaking. Three credit hours. Second term. Mr. Kochheiser.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are offered in this course:

First, **Economical Dairying**—This consists of visiting five dairy farms and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used.

Second, **Investigational Work**—This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

DRAWING

(See Engineering Drawing)

ECONOMICS AND SOCIOLOGY

Office, 5 Page Hall

PROFESSORS HAGERTY, NORTH, AND HAYES, ASSISTANT PROFESSORS WALRADT, MARK, LUMLEY, HELD, AND ECKELBERRY, MR. CLARKE, MISS SHEETS, AND DEPARTMENT ASSISTANTS

ECONOMICS

101-102. Principles of Economics. Three credit hours. The year. Not open to Freshmen or Seniors. Should precede all courses in Economics except 132, 133. Concurrent 139. Mr. Hayes, instructors, and assistants.

A study of the laws of production, exchange, distribution and consumption of wealth, combined with an analysis of the industrial actions of men as regards land, labor, capital, money, credit, rent, interest, wages, etc. Textbook, lectures, and individual investigation.

Economics 102 is given also during the first semester.

Economics 101 is given also during the second semester.

120. The Household. Three credit hours. Second semester. Prerequisite or concurrent, Sociology 101-102 or Economics 101-102. Miss Mark.

The family as an economic institution. The evolution of household industries and its effect upon the home. Organization of the household with reference to the functions of man and woman.

139-140. Elements of Accounting. Three credit hours. The year. Two recitations and one two-hour laboratory period each week. Prerequisite, registration in Economics 101-102. Mr. Eckelberry and assistants.

An introduction to practical accounting, including the preparation and interpretation of business statements.

147-148. Financial History of the United States. Two credit hours. The year. Prerequisite, Economics 101-102. Mr. Walradt.

A study of the fiscal and monetary history of the country from colonial times to the present, with special reference to federal taxation, loans and financial administrations, currency legislation, and the development of banking institutions.

SOCIOLOGY

101-102. Principles of Sociology. Three credit hours. The year. Not open to Freshmen. Mr. Hagerty, Mr. North, Miss Mark, Mr. Lumley, Mr. Clarke and department assistants.

A study of the fundamental principles of sociology. Text-book, lectures, collateral reading and individual investigations.

Sociology 101 is given also during the second semester.

Sociology 102 is given also during the first semester.

107. The Family. Three credit hours. First semester. Prerequisite or concurrent, Sociology 101-102. Mr. Lumley.

A study of the matrimonial institutions and family organization in primitive society. The evolution of marriage and the family through the Greek, Roman, and Medieval periods. The modern family, its functions and its problems.

109. The Handicapped, Defectives, and Dependents. Four credit hours. First semester. Prerequisite, Sociology 101-102. Mr. North.

A consideration of the blind, the deaf, the crippled, the insane, the feeble-minded and epileptic, the homeless and detached, the aged and infirm. The causes for the existence of these groups, social provision for their treatment, and modern programs of prevention.

112. Needy Families and Children. Four credit hours. Second semester. Science Nursing, fourth year. Prerequisite, Sociology 101-102. Mr. North.

A consideration of the influences tending to break down normal family life and their prevention; public and private relief. The sick poor. Dependent and neglected children. Methods and agencies of treatment. Theory and organization of modern charity.

ENGINEERING DRAWING

Office, 204 Brown Hall

PROFESSORS FRENCH AND MEIKLEJOHN, ASSISTANT PROFESSORS WILLIAMS, TURNBULL, AND SVENSEN, MR. FIELD, MR. PAF-FENBARGER, MR. YERGES, AND DEPARTMENT ASSISTANTS

101. Elementary Mechanical Drawing. Two credit hours. Either semester. All instructors.

102. Mechanical Drawing. Three credit hours. Either semester. Prerequisite, Engineering Drawing 101. All instructors. Lettering, orthographic, isometric, and oblique projections.

108. Practical Descriptive Geometry. Three credit hours. First semester. Two recitations, one drawing period each week. Landscape Architecture, second year. Prerequisite, Engineering Drawing 125.

125. Mechanical Drawing. Two credit hours. Either semester. College of Agriculture, first year.

127. Mechanical Drawing. One and one-half credit hours. First semester.

Elementary mechanical and architectural drawing.

128. House Planning. One and one-half credit hours. Second semester. Prerequisite, Engineering Drawing 127.

Engineering Drawing 127 and 128 are required in Home Economics, third year.

ENGLISH

Office, 103 Physics Building

PROFESSORS DENNEY, TAYLOR, GRAVES, KETCHAM, AND BECK,
ASSISTANT PROFESSORS ANDREWS AND PERCIVAL, MR. CRAIG,
MR. WILEY, MISS DOLLINGER, MISS SNIFFEN, MR. BURNET,
MISS HARBARGER, MR. SHIVELY, MR. FRENCH, MISS
PEGG, MISS ROBINSON, MR. MILLER, MISS HAAS,
MR. RAYMUND, AND DEPARTMENT ASSISTANTS

101. Paragraph Writing: Description and Narration. Two credit hours. Either semester. Text: Scott and Denney's Paragraph Writing, and Duncan, Beck, and Graves's Specimens of Prose Composition. All instructors.

English 101 is given also in the Summer Session.

104. Paragraph Writing: Exposition and Argumentation. Two credit hours. Either semester. Prerequisite, English 101. All instructors.

English 104 is given also in the Summer Session.

105. Descriptive and Narrative Writing. Two credit hours. First semester. Prerequisite, English 101, 104. Mr. Beck.

The number admitted to this course is limited to thirty. Special permission necessary.

106. Expository Writing. Two credit hours. Second semester. Prerequisite, English 101, 104, 105. Mr. Beck.

The number admitted to this course is limited to thirty. Special permission necessary.

107. Advanced Composition. Two credit hours. First semester. Prerequisite, English 101-104. Mr. Graves.

The number admitted to this course is limited to thirty. Special permission necessary.

108. Advanced Composition. Two credit hours. Second semester. Prerequisite, English 101-104. Mr. Graves.

The number admitted to this course is limited to thirty. Special permission necessary.

133. Introduction to American Literature. Three credit hours. Either semester. No prerequisite course. Mr. Taylor, Mr. Graves, Mr. Andrews. Second semester, Mr. Beck.

The outline of the history will be given by lecture. The reading and criticism will be of Irving, Cooper, Bryant, and Poe; of Hawthorne, Emerson, Whittier, Longfellow, and Lowell; and of Walt Whitman; with a brief survey of recent literature.

141. Nineteenth Century Poetry. Three credit hours. First semester. No prerequisite course. Mr. Taylor, Mr. Andrews. Wordsworth, Shelley, Keats, and their contemporaries.

145. Nineteenth Century Prose. Three credit hours. First semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Coleridge, Lamb, Landor, DeQuincy, Hazlitt, and Carlyle.

146. Nineteenth Century Prose. Three credit hours. Second semester. No prerequisite course. Mr. Denney, Mr. Graves, Mr. Beck, Mr. Percival.

Reading in Arnold, Ruskin, Newman, Pater, Stevenson, and in recent and contemporary essayists.

FOR SHORT COURSES ONLY

91-92. Elementary English. Two credit hours. The year. Description, narration, exposition, and argumentation.

PUBLIC SPEAKING

101. Public Speaking. Two credit hours. First semester. Prerequisite, English 101, 104. Mr. Ketcham, Mr. Wiley.

The principles of public speaking. The methods of securing the attention, and maintaining the interest of an audience. Practice in the application of principles and methods to simple expository and argumentative addresses.

102. Debating. Two credit hours. Second semester. Prerequisite, English 101, 104. Mr. Ketcham, Mr. Wiley.

Practice in making and presenting oral arguments. The theory and practice of argumentation and debate. Short class debates on subjects of current interest.

ENTOMOLOGY

(See Zoology and Entomology)

EUROPEAN HISTORY

Office, 305 University Hall

PROFESSORS SIEBERT AND McNEAL, ASSISTANT PROFESSORS
WASHBURNE AND KNIPPING, MR. BURROUGHS,
MR. NOYES, MR. STUCKERT, MR. GREER

101. Medieval History. Three credit hours. First semester. All instructors.

European History 101 is given also during the second semester.

102. Modern History from 1500 A.D. Three credit hours. Second semester. All instructors.

European History 102 is given also during the first semester.

FARM CROPS

Office, 101 Horticulture Building

PROFESSORS PARK AND WILLIAMS (Non-Resident), ASSISTANT
PROFESSOR WILLARD, MR. BORST, AND
DEPARTMENT ASSISTANTS

Any one of the courses, 101, 109, or 111 may be taken as the course in Farm Crops required for graduation. Students expecting to specialize in Farm Crops should omit course 101.

101. Field Crop Production. Four credit hours. Either semester. Three lectures and two laboratory hours each week.

Prerequisite, Botany 101-102. Botany 102 may be taken concurrently. Mr. Willard.

A study of the history, adaptation, culture, uses, and distribution of the cereal, forage, and miscellaneous crops. Laboratory study of the principal types and varieties.

Students who have had farm crops in an agricultural high school should not register for this course.

109. Cereal Crops. Four credit hours. First semester. Three lectures and two laboratory hours each week. Prerequisite, Botany 101-102.

A study of the characters, production, uses, and marketing of the principal cereal crops, with emphasis on commercial grading. Lectures, recitations, and trips. Laboratory study of types and varieties and practice in market grading.

111. Forage Crops. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Prerequisite, Botany 101-102. Mr. Willard.

Lectures and recitations on the characters, uses, and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification of forage crops and in seed identification.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

112. Special Crops. Two credit hours. Second semester. Prerequisites, Farm Crops 101, 109, or 111.

Occasional lectures, mostly individually assigned readings on special crops not emphasized in other courses. Reports presented to the class.

113. Plant Breeding. Three credit hours. Second semester. Two lectures and one laboratory period each week. Prerequisites, Farm Crops 101, 109, or 111, and Zoology 115. Mr. Park.

The application of genetic principles to the improvement of cultivated plants and study of special topics in plant genetics. The technique of breeding certain typical crops.

123. Crop Ecology. Two credit hours. First semester. Two lectures each week. Prerequisites, Farm Crops 101, 109, or 111. Mr. Willard.

The relations of our economic plants to their environment. A study of fundamental factors in crop production, and their relation to growth and yield. Investigation of special problems, lectures, reports, and assigned readings.

119-120. Minor Investigations. Two to four credit hours. The year. Prerequisites, two other courses in the department and permission of the instructor. Mr. Park, Mr. Willard.

FOR GRADUATES

201-202. Research in Plant Breeding and Crop Production.

203-204. Seminary in Farm Crops.

For description of graduate work in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Crop Production. Four credit hours. The year.

The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution, and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds and the selection of corn and small grains for show and seed purposes.

FRENCH

(See Romance Languages and Literatures)

GEOLOGY

Office, 103 Orton Hall

PROFESSORS BOWNOCKER AND CARMAN, ASSISTANT PROFESSOR PEATTIE, MR. LAMBORN, MISS MORNINGSTAR, MR. WEBB

***115. Physiography.** Three credit hours. First semester. Recitations, lectures, and laboratory. Prerequisite, Geology 151. Mr. Webb.

A study of the origin and history of physiographic features of the earth's surface, including detailed analysis of processes

*Not given in 1921-1922.

involved in stream work, glaciation, and the evolution of shore lines.

151. Geology. Three credit hours. Either semester. Two recitations or lectures and one two-hour laboratory period each week. Agriculture, first year. Mr. Lamborn, Miss Morningstar.

Physical and economic geology. The principles of geology will be presented in the light of their practical bearing upon agriculture. The common rock-forming minerals and rocks and geologic maps are studied in the laboratory; while in the field various illustrations of geological processes are studied.

121. Introduction to Geography. Three credit hours. First semester. Lectures, assigned reading, and laboratory. Mr. Peattie.

The fundamental principles of geography. An introductory study of the relations of the lithosphere, hydrosphere, and atmosphere to life, especially to the life of man.

122. Geography of North America. Three credit hours. Second semester. Lectures, assigned reading, and laboratory. Prerequisite, Geology 121. Mr. Peattie.

North America in its relation to the rest of the world. Its physical features, climate, and natural resources and their relations to the life and development of the North American people.

***124. Physical and Regional Geography of Europe.** Three credit hours. Second semester. Lectures, assigned reading and laboratory. Prerequisite, Geology 121. Mr. Peattie.

Europe in its relation to the rest of the world. Its physical features, climate, and natural resources and their relation to the life and development of the European people.

***125. Geography of Asia.** Three credit hours. First semester. Lectures, assigned reading, and laboratory. Prerequisite, Geology 121. Mr. Peattie.

Asia in its relation to the rest of the world. Its physical features, climate, and natural resources and their relation to the life and development of the Asiatic people, especially the people of India, China, Japan, and Siberia.

*Not given in 1921-1922.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105. Stratigraphic Geology of Ohio. Three credit hours. First semester. Prerequisite, Geology 151. Mr. Carman.

Field trips, laboratory work, lectures, and assigned readings. Field trips on Saturdays (entire day) while the weather permits.

The geological formations of central Ohio are studied in the field and those formations more distant from Columbus are studied by rock specimens and assigned readings. This course is intended to acquaint the student with the ordinary method of field investigations, such as the measurement and description of geological sections, the making of geological maps, the collection and identification of specimens, and the preparation of reports describing the regions studied.

106. Glacial Geology. Three credit hours. Second semester. Prerequisite, Geology 151.

A study of the glacial geology of North America. The first half of the semester will be given to lectures, assigned readings and map work. The second half, largely to field work and the preparation of reports, the field work being on Saturdays.

107-108. Invertebrate Paleontology. Three credit hours. The year. Recitations, lectures, and laboratory. Prerequisite, Geology 151. Mr. Carman, Miss Morningstar.

A study of the systematic classification of the animal kingdom as a means of becoming acquainted with the faunas that characterize the various geological formations. The course deals mainly with the generic and specific characters of the fossil invertebrates and their use in identifying and correlating geological formations.

116. Physiography of the United States. Three credit hours. First semester. Lectures, assigned readings, and laboratory. Prerequisite, Geology 151. Mr. Webb.

A study of each large physiographic province of the United States, with a detailed description and analysis of the present topography.

167. Economic Geology. Three credit hours. First semester. Prerequisite, Geology 151. Not open to Freshmen or Sophomores. Mr. Bownocker.

A study is made of the nature of ores, their classification and origin; the metallic ores in the United States, their distribution, abundance, modes of occurrence, and origin. The coals of the Appalachian field.

170. Economic Geology. Three credit hours. Second semester. Prerequisite, Geology 151. Not open to Freshmen or Sophomores. Mr. Bownocker.

The coal fields of the United States except those of the Appalachian field; petroleum, natural gas, and asphaltum; limes and cements; clays, building stones, etc. Emphasis will be laid on the deposits of Ohio.

GERMAN

Office, 317 University Hall

PROFESSORS M. B. EVANS, EISENLOHR, AND BLOOMFIELD,
ASSISTANT PROFESSOR THOMAS

101-102. Elementary German. Four credit hours. The year. All instructors.

German 101 is given also during the second semester.

German 102 is given also during the first semester.

103. Intermediate German. Four credit hours. Either semester. Prerequisite, German 101-102 or two entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of narrative prose; grammar review; prose composition.

German 103 is given also during the second semester.

104. Easy Classical Reading and Composition. Four credit hours. Either semester. Prerequisite, German 103 or three entrance units. Not open to students who enter with four entrance units in German. All instructors.

Reading of (a) a classical drama supplemented by discussions and lectures on the structure of the drama, its characters, and its historical background; (b) other literature of the classical period, or of the nineteenth century; prose composition.

German 104 is given also during the first semester.

106. Science Reading. Four credit hours. Second semester. Prerequisite, German 103 or three entrance units in German.

Rapid reading of technical literature. This is preceded or accompanied by drill on word formation, word compounds, sentence structure. The object of the course is to enable the student to read German technical literature.

NOTE—Students offering four units in German should take German 107-108, Advanced German, four credit hours.

HISTORY AND PHILOSOPHY OF EDUCATION

Office, 100 Hayes Hall

PROFESSOR ANDERSON

101-102. History of Education. Three credit hours. The year. Prerequisite, Psychology 101-102. Mr. Anderson.

Text: Graves's A History of Education (three volumes) and Graves's Great Educators of Three Centuries.

HOME ECONOMICS

Office, 120 Home Economics Building

PROFESSOR LANMAN, ASSISTANT PROFESSORS WALKER, ADAMS, FINDLEY, AND SHELOW, MISS LINDER, MISS HAMBLIN, MISS DONNELLY, MISS McGUIRE, MISS BUTLER, MISS BOOTH, AND DEPARTMENT ASSISTANTS

101-102. Foods. Five credit hours. The year. Two lectures, one quiz, and two laboratory periods each week. Prerequisite, Chemistry 106 or 110.

A study of the principles involved in the selection and preparation of foods; the occurrence, cost, and value of the nutrients in the various food materials.

104. Sanitation. Three credit hours. Either semester. Three lectures each week. Prerequisite or concurrent, Bacteriology 107. Miss Linder.

A study of the interdependence of home and public agencies in securing and promoting sanitary and hygienic measures; location and construction of the house, water supply, plumbing, heating, ventilation, lighting, and home nursing.

111-112. Textiles. Two credit hours. The year. One lecture and one laboratory period each week. Prerequisite or concurrent, Art 119. Mrs. Walker.

The study of fibres and fabrics from an historic, economic, and social standpoint. In the laboratory the making of garments involves the proper selection of material, the working out of suitable designs, and a comparison with commercially prepared articles.

Students having had previous work should consult the instructor.

113. Dress. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisite, Home Economics 111-112 and Art 121 prerequisite or concurrent.

A study of the relation of economics, hygiene, and art to clothing. The drafting and designing of patterns, the selection of materials, and garment construction.

116. Dress. Three credit hours. Second semester. One lecture and two laboratory periods each week.

Continuation and amplification of Home Economics 113. Outline of history of costume and continuation of the study of selection and combination of materials in their application to dress.

The lecture may be taken as a one-hour course without the laboratory.

118. The House. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Art 131, Home Economics 112, Home Economics 104, Economics 101, Art 141, either prerequisite or concurrent. Miss Donnelly.

A study of the evolution of the house and the principles underlying house arrangement, furnishing and decoration.

119. Household Management. Four credit hours. Either semester. Three lectures each week. Continuation of Home Economics 118. Prerequisites, Economics 102, Art 141, Home Economics 102, 118, 104, or 110. Mrs. Walker.

A study of the organization and management of the household with a view to securing the maximum of family welfare. Time is given to a consideration of the problems of expenditures through study of relative values, examination of budgets, and discussion of some of the factors influencing choice.

The Home Economics practice apartment where the students live in groups for a period of time, affords opportunity for practice in household management.

121. Food Problems. Three credit hours. Either semester. One lecture and two laboratory periods each week. Prerequisites, Chemistry 106 or 110, Home Economics 101-102, and consent of instructor.

Problems of markets, fuels, equipment, and labor involved in selection, purchase, preparation, and serving of food.

127. Special Methods. Three credit hours. First semester. Prerequisites, Home Economics 101, 102, 111, 112, and Psychology 101. Mrs. Adams.

This course is designed for students intending to teach home economics. Survey of home economics, examination of courses of study, planning of lessons, study of various types of schools, and methods for teaching the special phases of home economics work. Observations of such schools in operation. Two lecture hours each week, and observation trips as required.

128. Practice Teaching in Home Economics. Three credit hours. Second semester. Prerequisite, Home Economics 127. One lecture and a minimum of thirty class exercises in practice teaching during the semester. Mrs. Adams, Miss Gromme.

Observation work, arranging courses of lessons, practice teaching.

125-126. Survey of Home Economics. Three credit hours. The year. One lecture and two laboratory periods each week. Required in curriculum in Public Health Nursing and elective for certain irregular students by consent of instructor.

Principles of the selection and preparation of normal low cost dietaries, marketing, feeding of infants, house sanitation, household management, economic and hygienic aspects of textiles and clothing.

129. Millinery. Two credit hours. First semester. Prerequisite or concurrent, Home Economics 113. Miss Donnelly.

Selection, construction, renovation of hats. This course is primarily for students in training for vocational teaching.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

105-106. Special Problems in Home Economics. Two to five credit hours. Home Economics 105 is given either semester; Home Economics 106, the second semester. One lecture each

week. Prerequisite, 18 hours of required Home Economics work; the consent of the instructor must be obtained in order to take 106. Miss Shelow.

Reading and reports on Home Economics topics. Problems assigned for individual study.

110. Dietetics. Four credit hours. Either semester. Two lectures and two laboratory periods each week. Prerequisites, Home Economics 101-102, Physiology 101-102, Agricultural Chemistry 123-124.

A study of the chemical, physiological, and economic factors entering into the normal diet. Examination of dietary standards. Some attention to abnormal diet is given. Translation of standard dietaries into food materials and some exercises in making dietary studies and in preparing food for the sick.

133. Abnormal Dietetics. Four credit hours. First semester. Two lectures and two laboratory periods each week. Prerequisites, Home Economics 110, Anatomy 116, and consent of the instructor.

A continuation of Home Economics 110, treating in detail the adaptation of diet to diseases of nutrition.

FOR GRADUATES

201-202. Research in Home Economics.

For description of graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture Building

PROFESSORS PADDOCK AND MONTGOMERY, ASSISTANT PROFESSORS SCHERER, ELWOOD, AND HOTTES, MR. CHARLES, AND DEPARTMENT ASSISTANTS

POMOLOGY

101. Principles of Horticulture. Four credit hours. First semester. Three lectures and two laboratory hours each week. Required as a prerequisite for all horticultural courses except 118 and courses numerically listed between 151 and 172. Required of all students specializing in Horticulture. Credit can-

not be received for this course if the student has already passed Horticulture 118. No prerequisite.

A study of plant growth with special reference to orchard, garden, greenhouse, and nursery practice. The methods of plant propagation are studied in detail.

120. Small Fruits and Grapes. Four credit hours. Second semester. Three lectures and two laboratory hours each week. Required of all students majoring in Horticulture. Credit cannot be given for this course if Horticulture 118 has been passed. Prerequisite, Horticulture 101.

History, botany, geography, site, and soil for plantation, planting, cultural practices, harvesting, marketing, and cost accounting.

105-106. Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisites, Horticulture 101, 120. Mr. Paddock.

A study of the orchard fruits of Ohio, including history, botany, geography, site and soil for plantations, selection of nursery stock, planting plans, planting. Cultural practices, harvesting, marketing, storing, cost accounting. Several laboratory periods are devoted to a study of systematic pomology.

107. Plant Variations. Three credit hours. First semester. Prerequisite, Horticulture 106 or equivalent. Mr. Hottes.

A study of the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

109-110. Experimental Horticulture. Three credit hours. The year. One lecture and laboratory work each week. Prerequisites, Horticulture 103, 104, 106. Mr. Paddock.

The methods of experimentation and research. The limitations of demonstration, experimentation, and research are pointed out, and the functions of the experiment station are emphasized. Recorded experiments are studied and criticized and special problems for experimentation are planned. Technical problems are assigned, which are to be presented as theses. This work not only gives practice in the application of exact methods, but affords opportunity to become familiar with the literature of horticulture.

118. Farm Horticulture. Four credit hours. Either semester. Three lectures and two laboratory hours each week. Required of all Agricultural students. Not open to students who have credit for Horticulture 101 or 120. Mr. Paddock, Mr. Montgomery.

A study of the principles and practices of vegetable gardening, and of fruit growing adapted to the conditions of the farm home.

121-122. Systematic Pomology. Four credit hours. The year. Three lectures and two laboratory hours each week. Prerequisites, Horticulture 105, 106.

Nomenclature, classification and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value. Practice is also given in judging, grading, and packing.

VEGETABLE GARDENING

103-104. Commercial Vegetable Gardening. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisite, Horticulture 101 and 120. Mr. Montgomery.

A study of the history and development of vegetable gardening, the extent and geography of the industry, and the general principles involved in the production and utilization of vegetable crops.

131. Systematic Vegetable Gardening. Four credit hours. First semester. Prerequisite, Horticulture 103-104. Mr. Montgomery.

This course involves the study of the origin and history of vegetable species and varieties; their morphology and adaptation to environmental and market conditions; practice in judging, scoring, and display of vegetable products.

132. Greenhouse Construction and Management. Four credit hours. Second semester. Prerequisite, Horticulture 101. Mr. Montgomery.

Includes the consideration of types of greenhouses as regards form and materials, cost of construction, equipment, heating, watering, soil sterilization, fumigation, and ventilation, and the production of the more important greenhouse vegetable crops. An inspection trip to the important greenhouses of the State is a part of the required work.

133. Horticultural Products. Three credit hours. First semester. One lecture and four laboratory hours each week. Prerequisites, Horticulture 103-104, 105-106. Mr. Montgomery.

A study of the principles and methods applicable to the preservation of gardening and orchard products. The theory and art of canning, pickling, and preserving. The manufacture of cider, vinegar, apple butter, grape juice, and other products is considered from the commercial standpoint.

FLORICULTURE

140. Amateur Floriculture. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Open to all students, excepting those in Floriculture. Mr. Hottes.

A course designed for students of Home Economics, General Agriculture, and Horticulture who desire to become familiar with the culture of flowers about the home, including roses and the most commonly grown perennials and annuals. A one-day excursion to a near-by city will be required.

No credit will be given for this course if other courses in Floriculture have been taken.

141-142. Commercial Floriculture. Four credit hours. The year. Three lectures and three laboratory hours each week. Prerequisites, Horticulture 101, 132. Mr. Hottes.

Greenhouse plants and cut flowers used in wholesale and retail market. History, botany, propagation, culture, preparation for market, marketing, and storing. Laboratory work in the care of greenhouses and crops.

143. The Flower Shop. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The arrangement of flowers and plants to produce decorative effects, including bouquets, baskets, designs, table decorations and house decorations, together with the establishment and management of a flower shop.

144. Conservatory and Bedding Plants. Three credit hours. Second semester. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142. Mr. Hottes.

The culture, care, and use of tropical and sub-tropical plants

for decorative work in the conservatory, and the art of outdoor bedding. The class will participate in a day excursion.

145-146. Garden Flowers. Three credit hours. The year. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 101. Mr. Hottes.

The general subject of gardening, especially rose, water, and rock gardens with attention given to the propagation and growth of garden annual and perennial flowers as adapted to the florist's trade. The class will be required to take one all-day trip each semester to a near-by city.

147-148. Systematic Floriculture. Three credit hours. The year. Two lectures and two laboratory hours each week. Prerequisite, Horticulture 141-142, or Horticulture 145-146. Mr. Hottes.

A study of the origin, history, and identification of floral varieties including methods of developing new varieties.

LANDSCAPE ARCHITECTURE

150. Elementary Landscape Design. Three credit hours. Second semester. One lecture and two laboratory periods each week. Required in the second semester, second year of the curriculum in Landscape Architecture.

An elementary study of the principles of landscape design.

151-152. Plant Materials. Two credit hours. The year. Landscape Architecture, second year. One lecture and two laboratory hours each week. Prerequisite, Botany 101-102.

An elementary course in the systematic identification, and study of characteristics of trees, shrubs, vines, and herbaceous perennials used in landscape planting.

154. History of Landscape Architecture. Three credit hours. Second semester. Landscape Architecture, second year.

A study of the literature and chronological development of landscape gardening; the modifications affected by the influences of various countries; a detailed study of the development of modern landscape gardening.

156. Landscape Architecture. Two credit hours. Second semester. Open to any student. Recommended for third year students in Floriculture.

A general study of the underlying principles of landscape architecture. This course is open to the general student-body and is supplemented by discussions from outside lecturers, who have made a special study of different phases of this profession. The practical application of the principles of landscape architecture will be covered as they relate to the development of public and private properties including farms, country estates, gardens, and parks.

159-160. Advanced Landscape Design. Three credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 157-158.

A study in the practical application of the principles of landscape design to special problems, assigned to various students.

162. Plant Materials. Four credit hours. Second semester. Landscape Architecture, third year. Prerequisite, Horticulture 151-152.

An introductory study of the uses and adaptations of planting materials for landscape work. This course takes up a thorough study of groupings for special effect, the compiling of nursery lists and making up estimates of cost.

164. Landscape Surveying. Three credit hours. First semester. One lecture and two laboratory hours each week. Landscape Architecture, third year. Prerequisite, Civil Engineering 131.

A study of the methods adopted in compiling surveys, especially for landscape use; field practice with instruments.

166. Landscape Engineering. Three credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers in detail a study of the various phases of engineering in their direct relation to the field of landscape architecture. Much time is given to the compiling of specifications, estimates of cost, methods of construction, and reports of costs.

173-174. Civic Design. Three credit hours. The year. Landscape Architecture, fourth year. Prerequisite, Horticulture 164.

This course covers the principles of town and city planning, illustrated by a detailed study of practical problems in the

treatment of public squares, street intersections, parks, and playgrounds.

168. Plant Materials and Design. Four credit hours. Second semester. Landscape Architecture, fourth year. Prerequisite, Horticulture 162.

An advanced course in the detailed study of special problems relating to the selection and use of plants. This course is supplementary to Horticulture 159-160.

169-170. Special Problems. Three credit hours. The year. Open only to Senior students. For students who have shown special ability in this field of work, problems will be assigned. This course is purely elective.

172. Proseminary in Landscape. One credit hour. Second semester. Open to fourth year and graduate students.

Discussion of reports from practical landscape problems.

FARM WOODLAND

180. Farm Woodlot. Four credit hours. Either semester. Three lectures with occasional recitations and one three-hour laboratory period each week. Elective. Mr. Scherer.

It is the purpose of this course to show the significance of the forest and its place in farm management, the growth of trees and their identification; the methods of handling woodlands, both natural and artificial; the protection of the forest; the measuring and scaling of trees and logs; the utilization of products and by-products; the preservation of farm timbers, and the influences of the forest.

181-182. Arboriculture and Ornamental Planting. Three credit hours. The year. Two lectures and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will deal with the selection of ornamental trees; the transplanting of large trees; the pruning and shaping of trees; and the care of diseased and injured trees.

This course is especially adapted for students in Landscape Architecture, Agriculture, and Horticulture.

183. Lumber. Three credit hours. First semester. Two lectures and one three-hour period of laboratory or field work. Elective. Mr. Scherer.

A study of the methods and means of distinguishing woods, both growing and sawed; the cutting and sawing of lumber; grading and seasoning; diseases and the methods of preserving lumber, etc.

This course is especially adapted to the needs of students in Manual Training, Architecture, and Engineering.

184. Principles of Forestry. Three credit hours. Second semester. Three lectures with occasional recitations. Elective. Mr. Scherer.

This course is intended as a bird's-eye view of the objects and purposes of forestry; the problems it has to solve; the conditions necessary for its success; the materials with which it has to work and the technical terms peculiar to it,—all serving to introduce the student to a broad glimpse of the profession. It is planned to acquaint the student with the conditions necessary for tree growth; the factors influencing the distribution of forests; different types of forests; distribution of forests over the world; the exploitation and yield in different forest products and their relative importance.

Adapted to students of other departments.

FOR GRADUATES

201-202. Research Work.

For description of graduate course in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Horticultural Plant Forms. Four credit hours. First term. Horticulture, first year.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Horticulture and Agriculture.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the Three-Year students.

54. Principles of Horticulture. Four credit hours. Second term. Horticulture, first year.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for Agricultural students.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

65. Floriculture. Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fu-

migation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Horticulture 65.

67. Farm Woodlot. Four credit hours. First term. Three lectures with occasional recitations, and one three-hour period of field or laboratory work each week. Elective. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes, such as wind-breaks, hedges, shade, and ornament trees, maple syrup, nuts.

The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

INDUSTRIAL EDUCATION

Office, 212 Shops Building

PROFESSOR USRY, MR. SMITH

129. Cabinet Making. Three credit hours. Either semester. Prerequisite, Industrial Education 125 or Shopwork 101.

135. Craftwork for Women. Two credit hours. Either semester.

This course is primarily designed for women in Home Economics. Lectures and laboratory work dealing with the materials that enter into the construction of the home and its furniture, the finishing of these materials and the care of the finish, together with opportunity for selection of problems for making and finishing.

136. Craftwork for Women. Two credit hours. Either semester. Prerequisite, Industrial Education 135.

An advanced course following 135. Particular attention paid to the craftwork feature.

137. Methods Related to Agricultural Industry. Two credit hours. Second semester. Prerequisites, Shopwork 101 and 103, or equivalent.

A course in industrial education methods specifically related to the agricultural community.

138. Correlated Industrial Work. Two credit hours. Either semester.

For students in Agricultural Education (Smith-Hughes), designed to give experience and practice in the type of industrial work that meets the need of repairs and construction on the farm.

JOURNALISM

Office, 226 Shops Building

PROFESSOR MYERS

101-102. News-collecting and News-writing. Three credit hours. The year. Two lectures and three laboratory hours each week. Not open to Freshmen. Mr. Myers.

Attention is given to vocabulary and style in the gathering and writing of news for publication in the University daily newspaper, which is organized and operated as nearly like a city newspaper as possible.

Journalism 101 is given also during the second semester.

Journalism 102 is given also during the first semester.

For other courses in this department see the Bulletin of the College of Commerce and Journalism.

MATHEMATICS

Office, 314 University Hall

PROFESSORS BOHANNAN AND RASOR, ASSOCIATE
PROFESSOR ARNOLD

107. Mathematics for Students of Agriculture. Three credit hours. Either semester. Mr. Bohannon, Mr. Rasor, Mr. Arnold.

The elements of trigonometry and curve-plotting, numerical computation and algebraic processes germane to agriculture.

METEOROLOGY

Office, 201 Orton Hall

PROFESSOR BOWNOCKER

101. Elementary Meteorology. Two credit hours. Second semester. Textbook: Milham's Meteorology. Mr. Bownocker.

The ordinary meteorological instruments used by the United States Weather Bureau will be in use, and instruction will be given in handling them. The daily weather maps will be studied and the method of making them taught.

***102. Agricultural Meteorology.** Two credit hours. Second semester. Prerequisite, Meteorology 101 or Geology 162.

A part of the course will be devoted to a study of the climate of the United States and of Ohio, and of the relation of weather and climate to man. During a greater part of the course, the effect of weather upon the yield and distribution of crops will be considered.

Each student will be expected to carry out original investigations of the effect of weather upon crop yield, plant development or distribution, or upon animal or insect activities.

MILITARY SCIENCE AND TACTICS

Office, The Barracks

LIEUT. COLONEL LEONARD, LIEUT. COLONEL CONWAY (Retired),
MAJORS McLEAN, HANFORD, AND MURRAY, FIRST LIEUTENANTS
KAUFFMAN, BENNER, AND COX, ALL U. S. A.,
AND DEPARTMENT ASSISTANTS

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees therefore requires all male students, both special and regular, unless excused by the Military and Gymnasium Board, to drill during two years.

The Reserve Officers' Training Corps was established under the Defense Act of June 3rd, 1916, the required two years work being included in its four-year course. Instruction is given in Infantry, Field Artillery, and Veterinary. Under ordinary cir-

*Not given in 1921-1922.

cumstances this work is under eight commissioned officers, three warrant officers, and eleven non-commissioned officers of the Regular Army, detailed for the purpose.

EITHER 101-102 OR 105-106 ARE REQUIRED OF ALL FRESHMEN

101-102. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. An elementary course including infantry drill, close and extended order, battle formations, formations for protection in hostile countries, etc., practice with gallery rifles at any open hour, daily during the winter months. Lecture one hour each week by the President.

105-106. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Field artillery drill, administration, ordnance, and materiel. Lecture one hour each week by the President.

EITHER 103-104 OR 107-108 ARE REQUIRED OF ALL SOPHOMORES

103-104. Infantry. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. A continuation of 101-102, with additional instruction in pistol practice, the bayonet and hand grenades.

107-108. Field Artillery. One credit hour. The year. Three hours each week. One-half theoretical and one-half practical work. Artillery, motors, topography, and reconnaissance.

125-126. Advanced Military Science. For Infantry. Three credit hours. The year. Prerequisite, 101-102, 103-104, or equivalent. Five hours each week. Two hours are allotted to training as instructors in courses 101-102 or 103-104. Classroom work three hours each week in advanced minor tactics, map problems, liaison, topography, field engineering, military law, technique of automatic rifles, machine guns and infantry cannon.

135-136. Advanced Military Science. For Field Artillery. Three credit hours. The year. Prerequisite, 105-106, 107-108, or equivalent. Five hours each week. Classroom work three hours each week in field artillery, communication, gunnery, conduct

of fire, tactics, care and training of horses. Practical work in horsemanship and training as instructors, two hours each week.

127-128. Advanced Military Science. For Infantry. Three credit hours. The year. Prerequisite, 125-126 or equivalent. Five hours each week. Two hours allotted to training as instructors in courses 101-102 or 103-104. Classroom work three hours each week in topography, military policy of the United States, and advanced work in subjects under 125-126.

137-138. Advanced Military Science. For Field Artillery. Three credit hours. The year. Prerequisite, 135-136 or equivalent. Five hours each week. Classroom work three hours each week in minor tactics and map maneuvers, military policy of the United States, military history, military law, care and training of horses. Practical work in horsemanship and practice as instructors, two hours each week.

SUMMER CAMPS

As a part of the instruction of the Reserve Officers' Training Corps at the University, summer camps are conducted for this district: Infantry and Field Artillery, at Camp Knox, Kentucky, thirty-one miles from Louisville. One summer camp for the students of the first two years is held between the first and second school years. This camp is voluntary. The camp for the advanced course is held between the third and fourth years, and is required. For special reasons the advanced course camp may be postponed until after the fourth year is completed.

These camps are of six weeks' duration and the work is mostly practical. In addition to military work, field sports and competitions are conducted. The training for Infantry includes firing on the target range with service rifles and using ball ammunition in combat. The training for Field Artillery includes firing field guns with service ammunition. The development of leadership and discipline are primary subjects of these camps.

The Government furnishes transportation to and from the camps. While in camp, clothing, subsistence, medical attention and entertainment are provided.

PHYSICAL EDUCATION

Office, The Gymnasium

PROFESSORS ST. JOHN, WILCE, CASTLEMAN, AND NICHOLS, ASSISTANT PROFESSOR TRAUTMAN, MR. COBB, MR. HINDMAN

MEN

100-100. Hygiene. One credit hour. Either semester. Required of every Freshman during his first year of residence in the University.

This course deals with the various factors and conditions which affect the health and efficiency of the student.

101-102. Physical Education. One credit hour. The year. Two hours each week. Required of every Freshman during his first year of residence in the University.

The work in this course is based on a thorough physical examination given at the beginning of the year. The course includes body-building exercises for the relief and correction of slight bodily defects and faulty posture and gymnastic, athletic games and contests, aiming to promote and foster vigorous health and to give a fundamental training which will develop motor skill, endurance, strength, self-control and self-confidence.

WOMEN

ASSISTANT PROFESSOR SCOFIELD, MISS RAYNOR-RANCK,
MISS GIBLING

100-100. Hygiene. One credit hour. Either semester. Required of all women students during the first year of attendance at the University.

This course deals with the various factors and conditions which affect the health and efficiency of the student.

131-132. Physical Education. One credit hour. The year. Two hours each week. Required of all women students during the first year of attendance at the University.

One hour floor work including marching tactics, free-hand exercises, light apparatus, folk dancing and games.

One hour out-door sports. Choice of the following:

Fall term—Hockey, tennis, archery, playground games. Winter term—Basketball, hiking, games. Spring term—Baseball, track, tennis, archery.

Natural interpretative dancing may be substituted for the required hour of sport or taken in addition.

133-134. Physical Education. One credit hour. The year. Three hours each week for second year students. Required of all women students.

Continuation of Physical Education 131-132 with a required hour of swimming until the test is passed, after which a choice of out-door sport or dancing is given.

PHYSICS

Office, 107 Physics Building

PROFESSORS COLE, EARHART, AND BLAKE

103-104. General Physics. Four credit hours. The year. Recitations, lectures and laboratory. A non-mathematical course for students who have no entrance credit in physics. Mr. Earhart.

105-106. General Physics. Four credit hours. The year. Three recitations and one three-hour laboratory period. Prerequisite, entrance credit in physics. Mr. Earhart, Mr. Blake.

109. Physics for Students in Agriculture. Three credit hours. Either semester. One lecture and two recitations each week. Required in first year, College of Agriculture. Mr. Cole.

PHYSIOLOGY, PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY

Office, 104 Biological Building

PROFESSOR BLEILE, ASSISTANT PROFESSORS SEYMOUR, McPEEK, AND SMITH, MR. DURRANT, AND DEPARTMENT ASSISTANTS

101-102. Physiology. Three credit hours. The year. Not open to Freshmen. This course must be preceded by a course in chemistry. Mr. Bleile, Mr. Seymour, Mr. Durrant.

A foundation course in the fundamental principles of animal physiology with applications to the human body, including demonstrations in circulation, digestion, respiration, gross and minute anatomy, reflex action, and other simple phenomena of living organisms.

106. Chemical Physiology. Four credit hours. Second semester. Mr. Bleile, Mr. Seymour, Mr. Durrant.

A laboratory course including lectures and recitations on the physiology of the body fluids, foods, digestion, absorption, excretion and metabolism.

137-138. Physiology Laboratory. One credit hour. The year. Must be accompanied by Physiology 101-102, which course it is intended to supplement by experimental work. One laboratory period of two hours each week. Mr. Durrant.

POULTRY HUSBANDRY

Office, Judging Pavilion

PROFESSOR JACOBY

117-118. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Lectures and recitations on the principal breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management.

Laboratory work will consist of practice in judging poultry by comparison and score card, selecting and grading eggs, killing and picking poultry, mixing rations, etc. Two or three excursions to poultry plants in the vicinity of Columbus will be taken.

119. Poultry Management. Two credit hours. First semester. One lecture and one discussion period each week. Prerequisite, Poultry Husbandry 117-118. Mr. Jacoby.

A study of the management of large flocks of poultry will constitute the major part of the course. The market situation in Ohio and eastern states, the cost of production, the keeping of records and accounts, and the operation of commercial hatcheries will be discussed in the lectures.

120. Poultry Feeding. One credit hour. Second semester. Prerequisite, Poultry Husbandry 117-118. Mr. Jacoby.

Practice work in feeding and caring for a flock of fowls for one month to be assigned. Each student will be required to

visit the poultry plant morning, noon and afternoon, to do the necessary work and keep the records of a pen of fowls.

121. Poultry Culture. One credit hour. Second semester. Mr. Jacoby.

A series of lectures for students in Home Economics.

122. Incubator Practice. One credit hour. Second semester. Practice work in operating an incubator. Mr. Jacoby.

Each student will be assigned to care for an incubator during a period of four weeks. A study of incubators, methods of disinfecting, applying moisture, testing, pedigree hatching, leg banding, etc., morning, noon and afternoon.

124. Poultry Judging. Two credit hours. Second semester. Prerequisite, Poultry Husbandry 117-118. Mr. Jacoby.

Two periods each week will be devoted to judging the types and breeds of fowls, in which the score card and comparative methods will be used.

FOR SHORT COURSES ONLY

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

PSYCHOLOGY

Office, 403 University Hall

PROFESSORS ARPS, PINTNER, AND WEISS, ASSISTANT PROFESSORS BRIDGES, CRANE, AND BURTT, MISS COY, MISS ROGERS, MISS HATCH, MISS CHASELL, MR. ESPER, AND DEPARTMENT ASSISTANTS

101-102. Elementary Psychology. Introductory course. Three credit hours. The year. All instructors.

Psychology 101 is given also during the second semester.

Psychology 102 is given also during the first semester.

105. Introductory Psychology. Elementary course for students in the College of Agriculture. Three credit hours. First semester.

The content of this course is adapted to the needs of the students in the College of Agriculture. This course will satisfy only the prerequisite for Psychology 102.

PUBLIC HEALTH AND SANITATION

Office, 710 North Park Street

PROFESSORS HAYHURST AND McCAMPBELL, ASSISTANT
PROFESSOR SELBERT

105-106. Principles of Public Health Nursing. Two credit hours. The year. Two lectures or recitations each week. Total 64 hours. Mrs. Selbert.

This course takes up the historical development of nursing, the organization of the professional field, and the place of nursing in its relation to the various forms of medico-social and public service. It discusses the best methods of administration as to the supervision and arrangement of practical work, classification and preservation of records and the presentation and publication of reports. This course is intended also to give a general grasp of measures to be followed outside of hospital nursing in various types of sickness, to relieve immediate needs and to teach hygiene and methods to prevent the spread of disease. Special branches of Public Health work will be considered and the practical handling of individual problems will be discussed. Observation will be provided in agencies especially fitted to meet these problems.

110. Preventive Medicine. Two credit hours. Second semester. Two lectures or recitations each week. Total 32 hours. Mr. McCampbell.

The important facts and fundamental principles in preventive medicine are given consideration. The sociological aspects and the methods used in Public Health work are emphasized. Special attention will be given to the methods and procedures for preventing the occurrence of the communicable diseases as well as the control of this group of diseases. The non-infectious diseases will also be discussed from the standpoint of preventive medicine and the public health.

121. Public Health Problems. Two credit hours. Either semester. Two lectures or recitations each week. Given only on the campus. Mr. Hayhurst, Mr. McCampbell.

This course includes an elementary consideration of the various public health problems which present themselves. Consideration is given the question of the prevention of unnecessary infant mortality, the physical supervision of school children, the provision and the protection of the public water and food supplies, the proper elimination of wastes, the sociological aspects of Public Health work, including especially the question of the elimination of tuberculosis. Limited instruction is given on the matter of quarantine regulation, disinfection, and in the control of communicable diseases.

SCIENCE NURSING

101-102. Elementary Nursing. Two credit hours. The year. Four lectures or demonstrations each week. Total 128 hours. No prerequisite course. Science Nursing, first year.

A study of the development of nursing, its status in ancient times, and the ideals of modern nursing, instruction in the fundamental principles on which nursing depends. The demonstration and practice of those nursing duties which may be performed in the earlier stages of training.

103. Drugs and Solutions. One credit hour. Summer period following first year of Science Nursing Curriculum. One lecture each week. Total 12 hours. Prerequisite, first year of Science Nursing Curriculum.

Elementary discussion of drugs, their sources, crude forms, and preparation; practical problems in weights and measures; and the preparation of solutions.

104. Hospital Ward Duty. Eight credit hours. Summer period following first year of Science Nursing Curriculum. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, Science Nursing 101-102. By special permission, Science Nursing 101 may be taken concurrently with the above course.

The student performs the duties of a probationer in the wards of the Protestant Hospital.

111. Elements of Pathology. Two credit hours. First semester. Two lectures each week. Total 32 hours. Science Nursing, third year. Prerequisite, first two years and preliminary nursing period of Science Nursing Curriculum.

A lecture course covering the elementary principles; retrogressive, inflammatory and regenerative reactions of the tissues and the effects of special infectious agents upon the body; tumors.

113. Medical Nursing. Two credit hours. First semester. Two lectures each week. Total 32 hours. Science Nursing, third year. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Hygiene of the sick-room, diseases of the blood, of organs of circulation and lymphatics, of organs of respiration, of digestion and of excretion.

115. Surgical Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Science Nursing, third year. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Principles of septic and anti-septic surgery; fractures; surgical emergencies; pre-operative considerations; post-operative considerations; surgical tuberculosis; tumors; surgical conditions of the head, neck, chest, stomach, gall bladder, intestines, kidney and bladder, and fistulae and plastic surgery.

117. Materia Medica. One credit hour. First semester. One lecture each week. Total 16 hours. Science Nursing, third year. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Drugs, systems of measurement, the care and use of equipment, administration, solutions; important drugs; the medicine closet.

119. Hospital Ward Duty. Eight credit hours. Second summer period. Eight hours each day; six days each week for eight weeks. Total 384 hours. Prerequisite, first two years of the Science Nursing Curriculum and Science Nursing 104.

The student performs the duties of a nurse in training in the wards of the Protestant Hospital.

122. Proseminary in Case Studies. Two credit hours. Second semester. Two conferences each week. Total 32 hours. Science Nursing, third year. Prerequisite, first two years and preliminary nursing period of the Science Nursing Curriculum.

Assignment to each student of at least six cases embracing medical, surgical, obstetrical, and pediatrical nursing for complete study and the submission of written reports as the basis for class discussion.

123. Hospital Ward Duty. Eight credit hours. First semester. Eight hours each day, six days each week for eight weeks. Total 384 hours. Science Nursing, third year. Prerequisite, first two years of the Science Nursing Curriculum and Science Nursing 119.

The student performs the duties of a nurse in the wards of the Protestant Hospital.

125. Gynecological Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

Definition and brief history of gynecology; diseases of reproductive organs; of the genito-urinary tract; examinations and gynecological operations.

127. Orthopedic Nursing. One credit hour. First semester. One lecture each week. Total 16 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

Definition; deformities; apparatus used in orthopedic work; care of patients in plaster casts and braces; orthopedic operations.

129. Obstetrical Nursing. Two credit hours. First semester. One lecture and one demonstration each week. Total 32 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

Mechanism and management of normal labor; after-care of the mother; care and artificial feeding of the new-born infant; physiology and hygiene of pregnancy; pathological pregnancy.

131. Nursing in Diseases of Infants and Children. Two credit hours. First semester. Two lectures each week. Total 32 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

The normal child; nursing of sick children; diseases of digestive, respiratory, circulatory, nervous and genito-urinary systems; diseases of the blood and lymphatic glands; surgical conditions in children; social aspects of children's diseases.

133. Nursing in Communicable Diseases. Two credit hours. First semester. Two lectures each week. Total 32 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

Specific infectious diseases; the conduct of a case of communicable disease; diphtheria, cerebrospinal meningitis, acute poliomyelitis, lobar pneumonia, influenza, common colds, follicular tonsillitis, tuberculosis, scarlet fever, measles, chicken pox, whooping cough, mumps, gonococco-vaginitis, syphilis, gonorrhea, erysipelas, smallpox and typhoid fever.

135. Nursing in Diseases of the Eye, Ear, Nose, and Throat. One credit hour. First semester. One lecture each week. Total 16 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

Anatomy and physiology of the head with special reference to the eye, ear, nose, and throat; special diseases; methods of examination; methods of treatment; operations; solutions, strength and uses.

137. Operating Room Technic. One credit hour. First semester. One lecture or demonstration each week. Total 16 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

The operating room; instruments and supplies; preparation for operation; local preparation of patient for operation; and preparation and duties of the nurse.

139. Hospital Ward Duty. Six credit hours. First semester. Four ward duty hours each day; twenty-four each week. Total 402 hours. Science Nursing, fourth year. Prerequisite, first three years of Science Nursing Curriculum.

The student will perform the duties of a nurse in training in the wards of the Protestant Hospital.

141. Hospital Ward Duty. Eight credit hours. Third summer period. Eight hours each day; six days each week. Total 384 hours. Prerequisite, first three years of Science Nursing Curriculum.

The student performs the duties of a nurse in training in the wards of the Protestant Hospital.

ROMANCE LANGUAGES AND LITERATURES

Office, 104 Hayes Hall

PROFESSORS HENDRIX AND MOORE, ASSISTANT PROFESSOR ROCKWOOD (Acting Head), ASSISTANT PROFESSORS HAMILTON, HACKER, GUTIERREZ, WILLIAMS, HAVENS, AND CONRAD, MR. TAILLIART, MISS HIER, MR. SLOAN, MR. SMITH, MISS BROWN, MISS SCHONS, MR. GRISMER, MR. FOURE, MRS. ARTHUR, MISS BIGGER, MR. GRAHAM, MISS TERRY, AND DEPARTMENT ASSISTANTS

FRENCH

101-102. Elementary French. Four credit hours. The year. All instructors.

Grammar and prose.

103-104. Intermediate French. Four credit hours. The year. Prerequisite, French 101-102 or equivalent. All instructors.

French 104 is given also during the first semester.

SPANISH

101-102. Elementary Spanish. Four credit hours. The year. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Elementary reading as a basis for oral and written practice.

No student may take this course concurrently with French 101 or Italian 101.

103-104. Intermediate Spanish. Four credit hours. The year. Prerequisite, Spanish 101-102 or equivalent. All instructors.

A more comprehensive survey of the forms and syntax with more advanced reading as a basis for practice in speaking and writing.

RURAL ECONOMICS

Office, 113 Townshend Hall

PROFESSOR FALCONER, ASSISTANT PROFESSORS ERDMAN AND LANTIS, MR. MORISON

101. Farm Accounting. Two credit hours. Either semester. Lectures and practice work. The course deals with the general principles of accounting and their application to farm business. Systems of keeping farm records that are best adapted to different methods of farming are studied.

103. Farm Management. Four credit hours. First semester. For Juniors and Seniors. Prerequisite, Economics 101. Mr. Falconer.

Lectures, recitations, and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

104. Agricultural Economics. Three credit hours. Either semester. Three recitations each week. Prerequisite, Economics 101. For Juniors and Seniors. Required of all students who are held for a semester's work in Rural Economics.

The economics of agriculture. The economics of the production and marketing of agricultural products, the state and the farmer, the relation of agriculture to other industries and the social relations of agricultural communities are considered.

110. Rural Community Life. Three credit hours. Either semester. Prerequisite, Economics 101 or Sociology 101. Mr. Lantis.

Lectures and recitations on rural organization and community life. The rural church, rural school, rural home, and farmers' organizations and their bearing upon country life are studied.

113. The Distribution of Farm Products. Three credit hours. First semester. Prerequisite, Economics 101. Mr. Erdman.

A study of the distribution of agricultural products, organized methods of marketing, and prices.

120. Accounting for Country Elevators and Marketing Organizations. Two credit hours. Second semester.

System of accounting and business practice for country marketing associations.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

102. Farm Cost Accounting. Two credit hours. First semester. Prerequisite, Rural Economics 101 or Rural Economics 103. Mr. Falconer.

A study of systems of cost accounting in their application to the problem of farm organization and operation. The interpretation of cost figures.

111. Advanced Farm Management. One credit hour. Second semester. Prerequisite, Rural Economics 103. Mr. Falconer.

Selected problems in the field of farm management. Reference and assigned work. The study of accumulated farm management data.

114. Land Tenure. Two credit hours. Second semester. Prerequisite, Rural Economics 103-104. Mr. Falconer.

Historical and comparative study of land tenure with special reference to the relation of the landlord and tenant to each other and to the land.

116. Cooperation in Agriculture. Two credit hours. Second semester. Two recitations each week. Prerequisite, Rural Economics 104. Mr. Erdman.

A study of agricultural cooperation, mainly as found in the United States. The types of cooperative marketing, manufacturing and purchasing organizations, collective bargaining, cooperative credit, and insurance.

118. Rural Community Development. Two credit hours. Second semester. Two recitations each week. Prerequisites, Economics 101 or Sociology 101 and Rural Economics 104 or its equivalent. Mr. Lantis.

The characteristics of rural people, the opportunities for rural leadership and qualities necessary for it, how to make a rural survey, rural social organizations and various rural social problems are considered. The preparation of written reports on assigned subjects will be required.

121. Special Problems. Two to four credit hours. Either semester. Prerequisites, at least seven hours of work in the department and the consent of the instructor. Mr. Falconer, Mr. Erdman.

This course is designed for students desiring to work out special problems in the field of Rural Economics.

FOR GRADUATES

201-202. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of book-keeping and their application to farm records.

52. Farm Management. Four credit hours. Either term. Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing of farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term. Mr. Erdman.

A study of the methods and costs of marketing farm products; the organization of the markets; cooperation as a factor in marketing and production; and proposed improvements in our marketing system.

54. Rural Community Life. Four credit hours. Second term. Mr. Lantis.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Office, 125 Shops Building

PROFESSOR W. A. KNIGHT, MR. BEEM, MR. FOUST, MR. DENMAN,
MR. P. L. WRIGHT, MR. H. R. WRIGHT, MR. SENN,
AND DEPARTMENT ASSISTANTS

101. Carpentry. Two credit hours. Either semester. Mr. Denman, Mr. Senn.

Practice in carpentry, including the care of tools, fundamental principles of wood working, theory and practice of construction of farm buildings and dwellings.

This course is laid out with the intention of fitting the Agricultural student to give more thoughtful and careful consideration to the detail and supervision of the construction of his own farm buildings.

103. Forging. Two credit hours. Either semester. Mr. Foust, Mr. Wright.

The use and care of forge, fire, and tools, practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping and welding iron; the making, hardening, and tempering of steel punches, drills, and cold chisels.

FOR SHORT COURSES ONLY

51. Carpentry. Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Two credit hours. Either term.

Practice in iron and steel forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; hardening and tempering steel, etc.

SOILS

(See Agricultural Chemistry and Soils)

SPANISH

(See Romance Languages and Literatures)

SURVEY OF AGRICULTURE

Office, 203 Townshend Hall

PROFESSOR VIVIAN

Survey of Agriculture. One credit hour. First semester. The Dean and others.

A general discussion of the field of agricultural education as exemplified by the various curricula of the College of Agriculture. The course is intended primarily to assist the student in selecting his courses for the succeeding years.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSORS WHITE AND BRUMLEY

151. Agricultural Veterinary Medicine. Three credit hours. First semester. Mr. White.

The more common, sporadic and infectious diseases, minor surgery, castration, horseshoeing, and soundness are briefly considered in this course.

152. Anatomy of Domestic Animals. Three credit hours. Second semester. Prerequisite, Zoology 102. Mr. White.

Brief outline of the anatomy of the horse and the ox.

FOR SHORT COURSES ONLY

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Brumley.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes, and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. Brumley.

This course will include a description of minor surgery, horseshoeing, soundness, and a brief discussion of the causes, symptoms, and methods of handling the most important infectious diseases of Ohio livestock.

ZOOLOGY AND ENTOMOLOGY

Office, 101 Botany and Zoology Building

PROFESSORS OSBURN, OSBORN, AND METCALF, ASSOCIATE PROFESSOR HINE, ASSISTANT PROFESSORS BARROWS AND KRECKER, MR. KOSTIR, MR. KENNEDY, MR. WICKLIFF, AND DEPARTMENT ASSISTANTS

A number of lines of advanced work are open to students in Zoology and Entomology, who desire to specialize in preparation for investigation, practical zoology and entomology, positions as graduate assistant, etc. Students desiring to continue work beyond the first year are requested to confer with the Head of the Department as to the best sequence of courses.

ZOOLOGY

101-102. Elementary Zoology. Three credit hours. The year. Lectures and laboratory. Mr. Osburn, Mr. Barrows, Mr. Kreckler, Mr. Kostir, Mr. Wickliff, and assistants.

An introductory general course intended to give an acquaintance with animal life and the principles of biology, and as a foundation for more advanced courses.

Zoology 101 is given also during the second semester.

115. General Principles of Heredity. Three credit hours. Either semester. Three lectures each week. Prerequisite, Zoology 101-102 or Botany 101-102 or equivalent. Mr. Barrows.

A study of heredity in animals and plants, to serve as an introduction to heredity, as a basis for advanced work in plant and animal breeding, and as an aid in the analysis of biological and sociological problems into which the question of heredity enters. The subject will be presented in lectures, illustrated with lantern slides and actual specimens. Exercises in the form of problems will be assigned. The different types of heredity studied will be chosen from the animal and plant material which best illustrates the subject. Hereditary characters found in man will be used to a large extent. The course will be made as simple and practical as the subject will permit. Present day theories and technical applications will be left for discussion in the more advanced courses to which they properly belong.

118. Animal Parasites. Three credit hours. Second semester. Prerequisite, Zoology 101-102 or equivalent. Mr. Kreckler.

A course in the animal parasites which infest the domestic and other common animals, and man. Attention is given to the influence of the parasites upon their hosts, their relation to disease, their identification and general condition of life. Two lectures and one laboratory period each week.

This course is intended to be of particular benefit to Agricultural and Medical students, but it also serves as an introduction to the study of parasitism for those specializing in zoology.

The insect parasites are not treated in this course. For this work see Entomology 149.

121-122. Advanced Zoology of Invertebrates. Three credit hours. The year. One lecture and two laboratory periods each week. Elective. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits, and relationships of invertebrate animals together with the consideration of important biological principles. Lectures, laboratory exercises, and occasional field trips. Especially recommended as a second year course for students specializing in Zoology.

123. Microtechnic. Two credit hours. First semester. Two laboratory periods each week. Prerequisite, Zoology 101-102 or equivalent. Mr. Kostir.

A course in the theory and practice of microscopic methods, including fixing, embedding, sectioning, and staining of animal tissues, making permanent preparations, and special manipulation of microscopic accessories. Laboratory work, assigned readings, and conferences.

This course is designed for students intending to major in Zoology and those intending to teach biological science in the secondary schools.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

124. Animal Tissues. Two credit hours. Second semester. Two laboratory periods each week. Elective. Prerequisite, Zoology 121-122 or equivalent. Mr. Osburn, Mr. Kostir.

A comprehensive study of the origin and evolution of different types of cells and tissues in the animal kingdom. Dahlgren and Kepner's Principles of Animal Histology will be used as a guide. Laboratory work, assigned readings, and conferences.

129-130. Advanced Studies in Animal Heredity. Three credit hours. The year. Prerequisite, Zoology 115. Mr. Barrows.

Part of this course will be devoted to the study of recent advances in the field of animal heredity but a large part of the work will consist in the breeding of animals in the laboratory and the analysis of data collected.

141-142. Minor Investigations. Three to five credit hours. The year, or either semester. Prerequisites, Zoology 101-102 and the equivalent of Zoology 121-122, or Entomology 107-108. Mr. Osburn, Mr. Osborn, Mr. Metcalf, Mr. Hine, Mr. Barrows, Mr. Kreckler, and Mr. Kennedy.

An opportunity for the student to acquire some of the methods of research by pursuing the study of some problem.

***153-154. Animal Behavior.** Two to five credit hours. The year. Prerequisites, Zoology 101-102 or equivalent and another year of biology. Mr. Barrows.

Devoted to a study of the functions of the various parts of the nervous systems of the invertebrates and vertebrates, with emphasis on the mechanics of adjustment to heat, light, chemical and mechanical stimulation. Considerable time will be spent on experiments with living worms and insects. Lectures and laboratory work.

Required in the four-year course in Entomology in the Junior or Senior year. Elective to other students. Recommended to students in psychology. Given in alternate years.

159. Animal Ecology. Three credit hours. First semester. One lecture and four hours in the field or laboratory each week. Prerequisites, Zoology 101-102 and one additional year of a biological science. Mr. Kreckler.

An introduction to a study of animals in their natural surroundings which will include ponds, streams, fields, and woodlands, animal associations and the various factors which affect animals in relation to their environment.

Students who desire to continue the subject in the second half of the year can take up some particular phase of the work and should register in Zoology 142 for the second semester.

*Not given in 1921-1922.

This course is recommended to students who expect to teach biology.

FOR GRADUATES

201-202. Seminary in Zoology.

223-224. Invertebrate Embryology.

241-242. Research Work.

247-248. Invertebrate Zoology.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

Students majoring in Entomology are expected to have a collection of insects of about five hundred specimens before the end of the Senior year as a result of the collections made in the various courses.

107-108. Economic Entomology. Three credit hours. The year. Prerequisite, Zoology 101-102 or equivalent. Mr. Metcalf, Mr. Kennedy, and assistants.

The structure, physiology, development, and habits of insects, as a basis for insect control and for special study in entomology; followed by a general systematic survey of insects, mites, and ticks with special attention to destructive and beneficial species and the control of those injurious to farm, orchard, garden, forest, household, mill, and storehouse, and the health of man and domestic animals.

Lectures, quizzes, problems, and laboratory work on general anatomy, life-stages, field observations of habits and damage, and the preparation and application of remedial measures. Students are required to prepare a collection. Those desiring to collect specimens in advance should get printed instructions from the department.

112. Apiculture. Three credit hours. Second semester. Elective. Mr. Hine.

A study of the honey bee and the principles of bee-keeping, with practical training in the handling of bees.

113-114. Advanced Entomology. Four credit hours. The year. Prerequisites, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf, Mr. Kennedy.

Adapted for students intending to undertake investigation or teaching in Entomology.

The first semester's work is largely morphological embracing also the following subjects: physiology, embryology, metamorphosis, phylogeny, and classification. Mr. Kennedy.

The second semester's work is biological and ecological entomology, dealing with life histories, interrelations, adaptations, behavior, distribution, dispersal, natural enemies, etc. Mr. Metcalf.

The student is required to prepare a collection as a part of the work of this course, and additions to the collections of the previous year should number at least two hundred species.

147. Entomological Literature. Two credit hours. First semester. Prerequisites, Zoology 101-102 and Entomology 107-108. Mr. Hine.

Lectures on the development of entomological writings, studies of Government and Experiment Station Bulletins and other publications, assigned readings, and preparation by each student of a report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

148. Principles of Taxonomy. Two credit hours. Second semester. Prerequisites, Zoology 101-102 and one additional year in entomology or zoology. Mr. Osburn.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of a selected group or groups of insects or other animals.

155-156. Entomology. Three credit hours. The year. Required in the course in Landscape Architecture. Mr. Hine.

An elementary course dealing with structure and habits of insects with special reference to the forms that are of importance to forestry.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

141-142. Minor Investigations. Three to five credit hours. The year, or either semester. Prerequisites, Zoology 101-102 and the equivalent of Zoology 121-122, or Entomology 107-108. Mr. Osburn, Mr. Osborn, Mr. Metcalf, Mr. Hine, Mr. Barrows, Mr. Kreckler, and Mr. Kennedy.

An opportunity for the student to acquire some of the methods of research by pursuing the study of some problems.

151-152. Insect Control. Three credit hours. The year. Prerequisites, Zoology 101-102 and Entomology 107-108, or equivalent. Mr. Metcalf.

Principles of economic entomology, utilization of parasitic and predaceous forms, entomophagous fungi and bacteria, circumvention and exclusion, state and federal legislation, cultural methods, traps and trap crops, heat, animal dips, insecticide machinery and accessories, practical work in fumigation, spraying, inspecting, preparing an entomological exhibit and a collection of economic insects, rearing and insectary methods. Practical course intended to anticipate, so far as possible, the requirements and difficulties which the student will encounter in state or federal entomological work.

***149. Medical and Veterinary Entomology.** Four credit hours. First semester. Prerequisites, Zoology 101-102 and either Zoology 121-122 or Entomology 107-108, or equivalents. Given biennially. Mr. Metcalf.

The insects, mites, and ticks which cause or transmit diseases of man and domestic animals; the sources of infection, methods of transmission and interrelations with pathogenic bacteria and protozoa; the relations of the subject to parasitology, bacteriology, veterinary medicine, sanitary engineering, and public health; field observations of unsanitary conditions, practice in feeding, breeding and handling experimental insects, and practical problems in the control of parasites and insect-borne diseases.

The student is advised if possible to precede this course with Zoology 118.

162. Morphology and Development of Insects. Four credit hours. Second semester. Prerequisites, Zoology 101-102 and Entomology 107-108, or Zoology 121-122 or equivalents. Mr. Kennedy.

An advanced, comprehensive course on the internal structures of insects, together with what is known of their functions;

*Not given in 1921-1922.

morphology, histology, histogenesis, embryology, and metamorphosis.

This course parallels the work of Entomology 113-114 and 137-138, with emphasis on internal structures and functions.

FOR GRADUATES

201-202. Seminary in Entomology.

241-242. Research Work.

For description of graduate courses in this department see the Bulletin of the Graduate School.

FOR SHORT COURSES ONLY

51-52. Systematic and Practical Entomology. Four credit hours. The year.

TIME SCHEDULE

COLLEGE OF AGRICULTURE

The following courses and sections are intended primarily for students in the College of Agriculture. Assignment to sections will be made strictly according to the order of receipt of the election cards and students will be admitted to the sections they elect, provided those sections are not already filled.

Students from the College of Agriculture must not elect courses that are not listed here without first consulting the Secretary of their College.

Explanations

The two columns of figures under Course No. give the number of the course for the two semesters. The third column of figures indicates the number of credit hours each semester of the course.

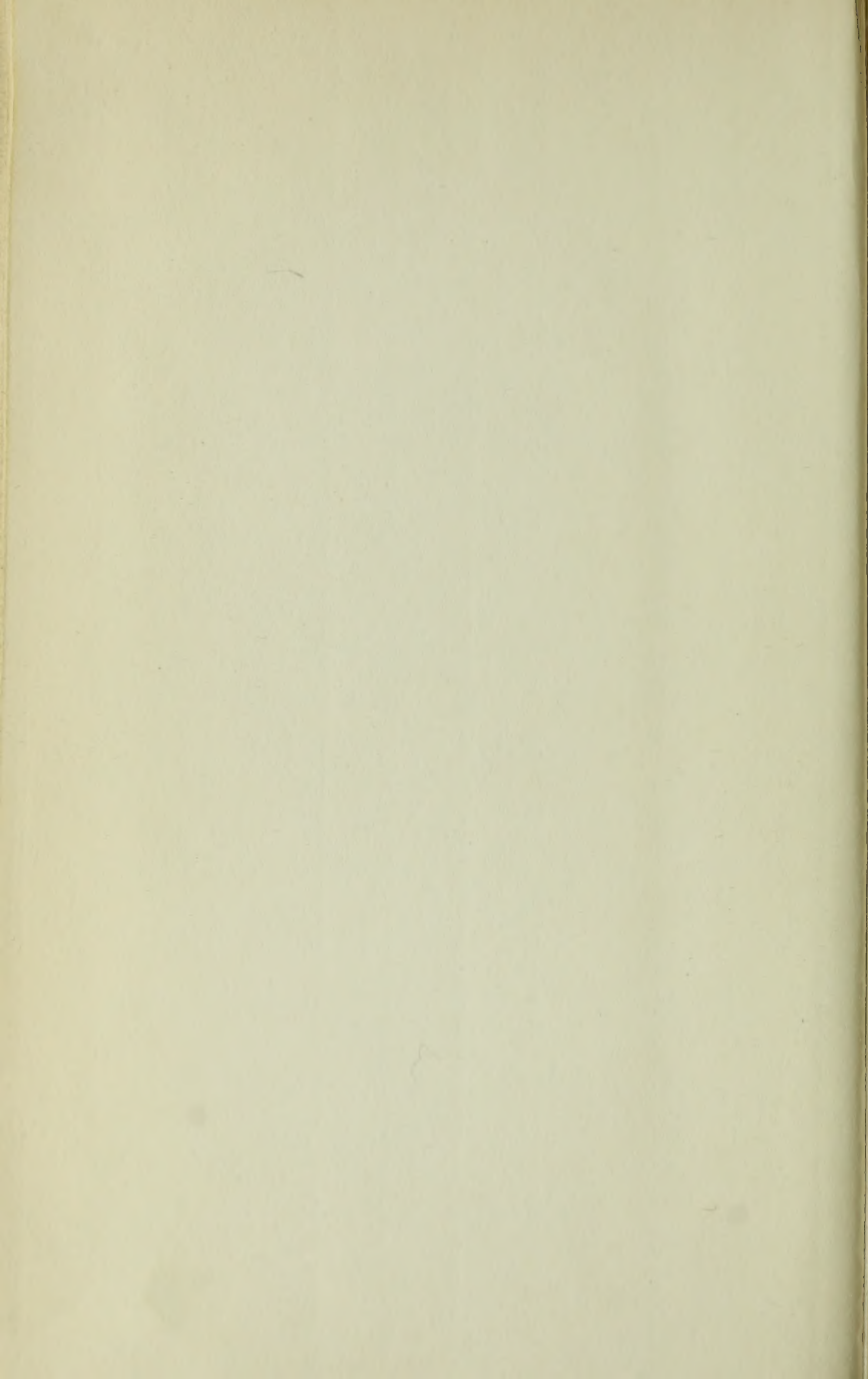
Key to Abbreviations

- Bi.—Biological Building
- B. Z.—Botany and Zoology Building
- Br.—Brown Hall
- Ch.—Chemistry Building
- Ha.—Hayes Hall
- H. E.—Home Economics Building
- H. F.—Horticulture and Forestry Building
- L.—Library
- Lo.—Lord Hall
- M. L.—Machinery Laboratory
- Obs.—Observatory
- O.—Orton Hall
- P.—Page Hall
- Pav.—Judging Pavilion
- Ph.—Physics Building
- R. L.—Robinson Laboratory
- S.—Shops Building
- T.—Townshend Hall
- U.—University Hall
- V. C.—Veterinary Clinic
- V. L.—Veterinary Laboratory

L.—Lecture; Q.—Quiz; Lab.—Laboratory; R.—Recitations.

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